

U. S. DEPARTMENT OF COMMERCE
WEATHER BUREAU

UNIVERSITY LIBRARY
DOCUMENTS SECTION

KEY TO METEOROLOGICAL RECORDS DOCUMENTATION NO. 5.34

CATALOGUE OF METEOROLOGICAL
SATELLITE DATA—TIROS IV
TELEVISION CLOUD
PHOTOGRAPHY



U. S. DEPARTMENT OF COMMERCE
LUTHER H. HODGES, Secretary
WEATHER BUREAU
F. W. REICHELDERFER, Chief

KEY TO METEOROLOGICAL RECORDS DOCUMENTATION NO. 5.34

CATALOGUE OF METEOROLOGICAL
SATELLITE DATA—TIROS IV
TELEVISION CLOUD
PHOTOGRAPHY



WASHINGTON, D. C. : 1963

PURPOSE

The Key to Meteorological Records Documentation Series has been established to provide guidance information to research personnel making use of climatological data.

Frequently users of such data have found it necessary to spend a great deal of time establishing whether the criteria for observing or computing various elements have changed over the period of record or in what form the data are available.

It is therefore hoped that the presentation of this series may not only conserve valuable time but may have a direct influence in improving the accuracy of research results.

PREFACE

This bulletin contains a complete listing of cloud photograph sequences obtained by the TIROS IV meteorological satellite, and a set of maps showing a schematic nephanalysis for each sequence. It also describes how copies of these photographs may be obtained from the National Weather Records Center.

Robert L. Pyle and Leslie A. Watson
National Weather Satellite Center

EARLIER TIROS DATA CATALOGUES

Catalogues of earlier TIROS Meteorological Satellite data are available in this series, as follows:

- No. 5.31 "Catalogue of Meteorological Satellite Data - TIROS I Television Cloud Photography," published in 1961, price 70 cents.
- No. 5.33 "Catalogue of Meteorological Satellite Data - TIROS III Television Cloud Photography," published in 1962, price 70 cents.

CATALOGUE OF METEOROLOGICAL SATELLITE DATA--
TIROS IV TELEVISION CLOUD PHOTOGRAPHY

The TIROS IV meteorological satellite was launched by the National Aeronautics and Space Administration on February 8, 1962. Sequences with usable pictures were obtained until June 16, 1962. Traveling in a nearly circular orbit, it averaged about 420 nautical miles above the earth's surface with a difference between apogee and perigee of 72 nautical miles. It had an orbital period of 100.4 minutes which corresponds to 14 and a fraction passes around the earth each day. The orbit was inclined at an angle of 48.3° to the earth's equatorial plane and thus, as with previous TIROS, picture coverage was obtained only in the zone bounded roughly by 55° north and south latitude.

The satellite was spinning at a rate that varied between 8 and 12 rpm. Being spin-stabilized, the spin axis orientation in space changed only gradually during its operational lifetime. Its two cameras, mounted with their optical axes parallel to the spin axis, were able to view the earth during less than half of each orbital pass. Usable picture coverage was thus restricted to the portion of each orbital pass during which the underlying earth was both sunlit and within view of the cameras.

Camera 1 had a wide angle lens which, when the optical axis was normal to the earth's surface, covered an area about 750 miles square. Camera 2 had a medium angle lens which covered an area about 475 miles square in normal view. When the optical axes departed from vertical, a larger area was viewed in oblique perspective.

Camera action aboard TIROS IV was controlled from two Command-and-Data-Acquisition (CDA) stations, one located at Wallops Station near Chincoteague, Va., and the other at Pacific Missile Range, Point Mugu, Calif. The satellite came within radio range of one or both of these stations for a few minutes each on 8 or sometimes 9 of its 14 daily passes. During these radio contacts the station could:

1. receive a series of television pictures directly as they were taken, if it was daytime and the optical axes were appropriately oriented;
2. command the system to take pictures remote from the CDA station after a specified time delay and store them on tape aboard the satellite;
3. play back one previously commanded tape sequence from each camera.

Pictures received by the direct mode were taken only over the United States and nearby ocean areas, while tape sequences usually show other parts of the world. In the region traversed during the five or six consecutive passes when the satellite could not be contacted, picture coverage was limited to one tape sequence by each camera each day.

Tape pictures were obtained in sequences of about 28 to 32 frames each. Direct sequences were usually shorter and more variable in length. Occasionally the direct

pictures obtained at one station on one pass may be grouped into two sequences if the series was interrupted to permit playback of radiation data or a tape sequence. The time interval between frames was either 10 or 30 seconds in most direct sequences, and was always 30 seconds in tape sequences.

The pictures are virtually square with some small distortion resulting from the particular setting of the electronic readout equipment. "Fiducial marks" etched on the face of the vidicon tube appear in the picture image as a central cross and four L-shaped corners, although they may show poorly or not at all against a dark background.

Since the satellite was spinning, the earth's image rotates from frame to frame by an amount that depends on how much the satellite's spin rate departed from being an integral number of rotations during the picture-taking interval. The rotation rate may be considered constant during any one sequence. The center of rotation, which is the point where the optical and spin axes intersect the image plane, is not quite at the central fiducial cross mark. See Reference 2 for photogrammetric information needed to precisely orient TIROS IV pictures.

Cloud picture transmissions received at CDA stations were displayed on a television screen and simultaneously recorded on magnetic tape. A 35 mm. camera photographed the television screen, including also a lighted panel board mounted underneath. The panel board information provides a legend for each picture including camera number, mode (TAPE or DIRECT), frame number, orbit pass number, and station initial preceded by "4" for TIROS IV. Occasionally a clock appears in the legend but the time shown has no relation to picture taking time. The figures in the legend are larger and more distinct than those in pictures from previous TIROS.

In the example of figure 1, the legend indicates the picture was received on orbital pass number 794, and that it is a tape picture taken by camera 1. The letter W at right center following the number "4" indicates the picture was acquired at the Wallops Station.

The panel board legend also contains a series of numerals whose sum indicates the frame number. In figure 1, the frame number is 9, representing the sum of 8 and 1. (At the bottom of the panel board is a similar series of numerals intended to give information on sun angle, but the system did not work properly and the values cannot be easily interpreted). Within each sequence, the indicated frame numbers increase in the order that the pictures were received at the CDA station. For direct mode this is the time order in which the pictures were taken. But tape sequences were played back to the station in reverse time order. Pictures of both modes are arranged on the film in order of increasing frame number; therefore it is important to note that this arrangement is correct time order for direct sequences, but is reverse time order for tapes. Malfunctioning occasionally caused the frame counting system to behave erratically resulting in repetition and discontinuity in the frame number series.

The orderly time sequence of pictures is sometimes interrupted by spurious noise frames or complicated by skipped frames. In such cases the erratic frame numbers are not a dependable indicator of real picture counts. However, the regular rotation of image orientation is often a helpful clue in determining the actual time interval between particular frames.

The following pages of maps and tabulated listings give descriptive information about the pictures obtained by TIROS IV. In the listings each picture sequence is described by one line, and for each station the sequences are listed in the order in which they appear on the film reel. The column headings and entries have the following meanings:

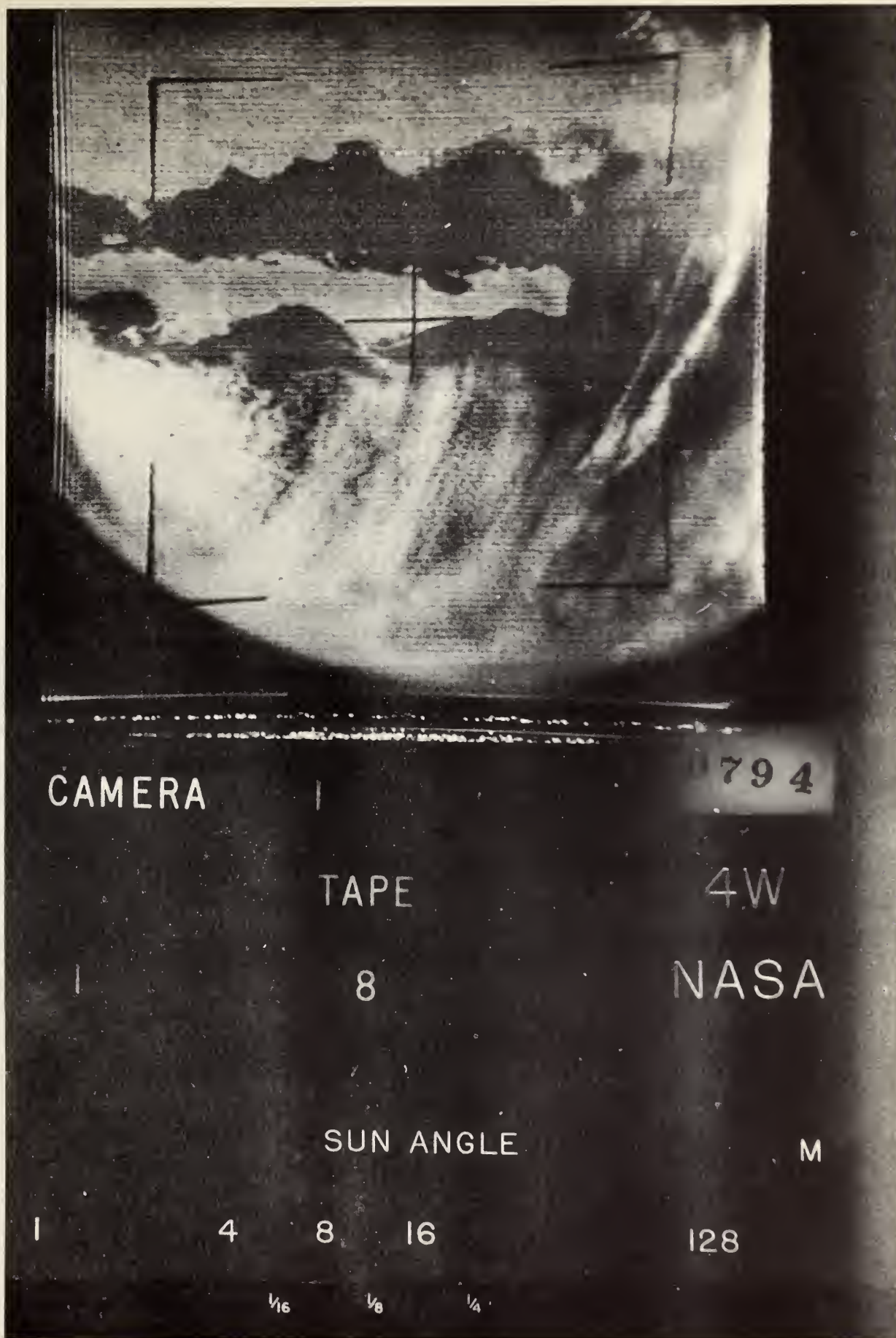


Figure 1 - Example of TIROS IV Cloud Photography

REEL: Number of the film reel which contains the sequence.

FILM LEGEND: This section gives the information actually appearing on the film in the panel board legend accompanying each picture. This information is used to identify the sequence on the film reel.

PASS: Orbital pass number on which the pictures were read out, as indicated in the upper right corner of the legend.

M: Mode of transmission indicated in the legend.

D = Direct

T = Tape

C: Camera number indicated in the legend.

1 = Camera number one (wide angle)

2 = Camera number two (medium angle)

S: CDA station which received the sequence.

W = Wallops Station, Va.

P = Point Mugu, (Pacific Missile Range), Calif.

(When the panel board legend contains an error, the information as it appears on the film is listed under FILM LEGEND with an asterisk to indicate an erroneous designation. Correct information for mode and camera can always be found in the PICTURE SEQUENCE DATA section. For direct sequences the correct readout orbit pass number is the same as the picture-taking pass number listed under PICTURE SEQUENCE DATA. For tape sequences the correct readout pass number often can be deduced by comparison with preceding and following sequences. On the film reels, legend inaccuracies are indicated in the sequence title frame by the word ERROR followed by P, C, or M for pass, camera, or mode as appropriate. Unfortunately, errors in frame number and sun angle are too numerous to designate individually in this manner.)

PICTURE SEQUENCE DATA: This section documents the picture content.
Sequences having no usable frames are on the film reel and are therefore included in the listings but are not fully documented in this section.

PASS: Orbital pass number on which the first picture of the sequence was taken. For direct sequences this pass number and the readout pass number given under FILM LEGEND are the same. For tape sequences, however, picture taking usually began on an earlier pass.

M: Actual mode of transmission coded as in FILM LEGEND.

C: Actual camera used, coded as in FILM LEGEND.

DATE: Month and day when the first picture was taken.

TIME: Approximate time, in hours and minutes (GMT), of the midpoint in the sequence. This time is also given with the nephanalysis on the coverage map.

FRAME:

TI: Time interval, in seconds, between frames. V indicates time interval varies within the sequence.

US: Number of usable frames in the sequence.

+: Number of frames in which the central fiducial cross mark appears on the earth, indicating that the earth's image occupies a substantial portion of the picture.

GEOGRAPHICAL AREA COVERED: Column headings refer to numbered areas outlined on the first map. Column entries indicate the areas included in the picture sequence.

L: Presence of a landmark is indicated by the following code:











- 0 = No ground image anywhere in the sequence.
- 1 = Ground image possible but not seen.
- 2 = Ground image noticed but not identified.
- 3 = Identified ground image.

VBSC: Presence of a Vortex, Cloud Bands, Cloud Streets or Cells in the sequence is indicated by the following code:

- 0 = None anywhere in the sequence.
- 1 = Ill defined.
- 2 = Easily recognized.
- 3 = Pronounced.

Following the listings is a series of maps which shows the area covered by each sequence having usable frames and for which picture taking time has been determined. Most of the picture sequences were analyzed for their cloud content during routine operations, and these nephanalyses have been reproduced on the maps. Satellite attitude and exposure time are not always accurately known at the time the nephanalyses are constructed. However, most of the nephanalyses are considered to be geographically accurate to about $\pm 2^\circ$ with a few ranging from $\pm 1^\circ$ to $\pm 5^\circ$. Users are cautioned not to attribute any greater accuracy to the location of cloud patterns shown.

The following legend defines the symbols used in the nephanalyses:

MAJOR	BOUNDARY	
MINOR	BOUNDARY	
CLEAR	CLR	
SCATTERED	S	
BROKEN	B	
OVERCAST	⊕	
HEAVY	+	
THIN	-	
	BANDS	
	VORTEX	
	STFM	
	CUFM	
	CIFM	
	CB	

When no nephanalysis was available for a usable sequence, a generalized outline of the area covered is shown instead.

The coverage swaths are grouped by PASS DAY, which includes all sequences taken on or near the series of 8 or 9 consecutive passes that come within range of the CDA stations each 24-hour period. These passes may fall on one or on two calendar days, and the maps are dated accordingly. Tape swaths are identified by the readout pass number, followed by the picture-taking pass number. Direct swaths are identified by a single pass number and the letter D. Midpoint time is given for all swaths, and camera number is added when necessary to identify definitely the sequence to which the swath applies. Two direct sequences acquired at the same station on the same pass are normally combined in one swath, since the short interruption for tape playback usually does not cause a significant gap in the coverage.

The time given on the maps and listed under PICTURE SEQUENCE DATA is the approximate midpoint time for the sequence. Anyone desiring more accurate times for individual frames should direct inquiries to the Documentation Section, National Weather Satellite Center, U. S. Weather Bureau, Washington 25, D. C.

TIROS IV master films will be deposited at the National Weather Records Center, (NWRC), U. S. Weather Bureau, Arcade Building, Asheville, North Carolina. Persons or institutions desiring copies may order them from NWRC in the form of 35 mm. positive transparencies for projection or 35 mm. duplication negatives from which opaque prints can be made. The pictures are stored chronologically on 100-foot reels. Orders must be placed for one or more complete reels, at a cost of \$6.00 each, as it is not now possible to furnish copies of individual frames or to provide enlargements or other picture formats. These film copies will be furnished without sprocket holes unless a specific request to the contrary is made when placing the order. Sprocketed copies are furnished at a cost of \$6.50 per reel.

A complete listing of satellite latitude, longitude, and height for all usable sequences, together with other information useful in determining precise location of TIROS IV pictures, will be published in the "Meteorological Satellite Laboratory Report" series. Detailed listings of picture-taking time for all frames are contained on the "TIROS IV FRAME LOGS" which are on file at the Documentation Section, National Weather Satellite Center, and will be made available on microfilm from NWRC.

Latitude-longitude grids for overlay on TIROS IV pictures are being computed for virtually all usable TIROS IV sequences. When completed, microfilm copies of these grids will be available from NWRC.

A detailed description of the problems and uncertainties encountered in geographically locating TIROS pictures is contained in Reference 1.

REFERENCES

1. Hubert, L. F.: "TIROS I Camera Attitude Data, Analysis of Location Error, and Derivation of Correction for Calibration", Meteorological Satellite Report No. 5, U. S. Weather Bureau, Washington, D. C., 1961.
2. "Documentation for TIROS IV Television Data", Meteorological Satellite Laboratory Report now in preparation at National Weather Satellite Center, U. S. Weather Bureau, Washington, D. C., 1962.

10

REEL	FILM	LEGEND				PICTURE SEQUENCE DATA																							LVBSC			
		PASS	M	C	S	PASS	M	C	DATE	TIME	TI	US	+	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		16	17	
457	0784	T	1	P	0784	T	1	0404		30	00	00																				00000
415	0792	C	1	W	0792	D	1	0404	1645	10	29	20						4														30022
415	0793	C	2	W	0793	D	2	0404	1835	10	25	25						4	5													30300
415	0794	T	1	W	0792	T	1	0404	1820	30	31	31						3	4													30033
415	0794	T	2	W	0794	T	2	0404	2010	30	30	30						3	4													33300
415	0795	T	1	W	0795	T	1	0404	2152	30	31	31						2	3	4												30323
416	0796	T	1	W	0796	T	1	0404	2332	30	31	31						2	3													21112
416	0796	T	2	W	0794	T	2	0404	2140	30	31	25						2														00300
457	0797	T	1	P	0797	T	1	0405	0106	30	31	29						1	2													02203
416	0806	T*1	W		0806	D	1	0405	1612	30	03	03																				00021
416	0807	T	1	W	0806	T	1	0405	1615	30	29	29																				33333
416	0807	C	1	W	0807	D	1	0405	1755	10	30	30																				23300
416	0808	C	2	W	0808	D	2	0405	1945	10	28	28																				20000
416	0809	T	1	W	0808	T	1	0405	1930	30	31	31						2	3													30333
416	0810	T	1	W	0810	T	1	0405	2255	30	31	31						2	3													02013
416	0811	T	1	W	0811	T	1	0406	0035	30	31	31						2	3													03333
416	0811	T	2	W	0809	T	2	0405		30	00	00																				00000
416	0811	C	2	W	0811	D	2	0406		10	00	00																				00000
458	0812	T	1	P	0812	T	1	0406	0219	30	31	31						1	2													22203
458	0813	T	1	P	0813	T	1	0406	0357	30	31	31						1	2													30300
416	0821	C	2	W	0821	D	2	0406	1725	10	25	25																				30001
416	0821	T	2	W	0811	T	2	0406	0200	30	23	23						1														30100
416	0822	T	2	W	0822	T	2	0406	1855	30	30	30																				30303
416	0822	C	2	W	0822	D	2	0406	1900	10	24	24																				32030
416	0823	C	2	W	0823	D	2	0406	2050	10	30	30																				30300
416	0823	T	2	W	0823	T	2	0406	2035	30	31	31						2	3													20332
416	0824	T	1	W	0816	T	1	0406		30	01	01																				00000
416	0824	T	2	W	0824	T	2	0406	2219	30	23	23						2	3													00233
417	0825	T	1	W	0825	T	1	0407	0010	30	31	31						2	3													23003
458	0826	T	1	P	0826	T	1	0407	0130	30	31	31						1	2													20323
458	0826	T	2	P	0825	T	2	0406	2351	30	31	32						1														02223
417	0834	T	1	W	0828	T	1	0407	0505	30	27	27						1														30020
417	0834	T*2	W		0834	D	2	0407	1502	30	01	01																				00322
417	0835	C	2	W	0835	D	2	0407	1645	10	19	19																				30000
417	0835	T	2	W	0834	T	2	0407	1500	30	30	30																				30322
417	0836	C	2	W	0836	D	2	0407	1830	10	27	27																				30100
417	0836	T	2	W	0836	T	2	0407	1815	30	31	31						2	3													30002
417	0837	C	1	W	0837	D	1	0407	2012	10	23	23																				30000
417	0838	T	1	W	0838	T	1	0407	2140	30	31	31						2	3													03003
417	0838	T	2	W	0837	T	2	0407	2000	30	31	31						2	3													20002
417	0839	T	1	W	0839	T	1	0407	2327	30	25	25						2	3													33332
417	0839	T	2	W	0839	T	2	0407	2315	30	31	31						1	2													03302
417	0848	T	1	W	0840	T	1	0408	0100	30	29	29						1														20223
417	0848	T*1	W		0848	D	1	0408	1423	30	02	02																				00000
417	0849	T	1	W	0848	T	1	0408	1430	30	30	30																				33333
417	0849	D	2	W	0849	D	2	0408	1615	10	18	18																				20300
417	0850	T	2	W	0842	T	2	0408	0425	30	31	31						1														20000
417	0850	C	2	W	0850	D	2	0408	1755	10	19	19																				00200
418	0851	C	2	W	0851	D	2	0408	1940																							33302
418	0852	T	2	W	0851	T	2	0408	1935	30	14	14																				30200
418	0852	C	2	W	0852	D	2	0408	2130	10	24	24																				33000
418	0853	T	2	W	0853	T	2	0408	2245	30	31	31						2	3													02333
418	0853	T	1	W	0850	T	1	0408	1740	30	31	23													</							

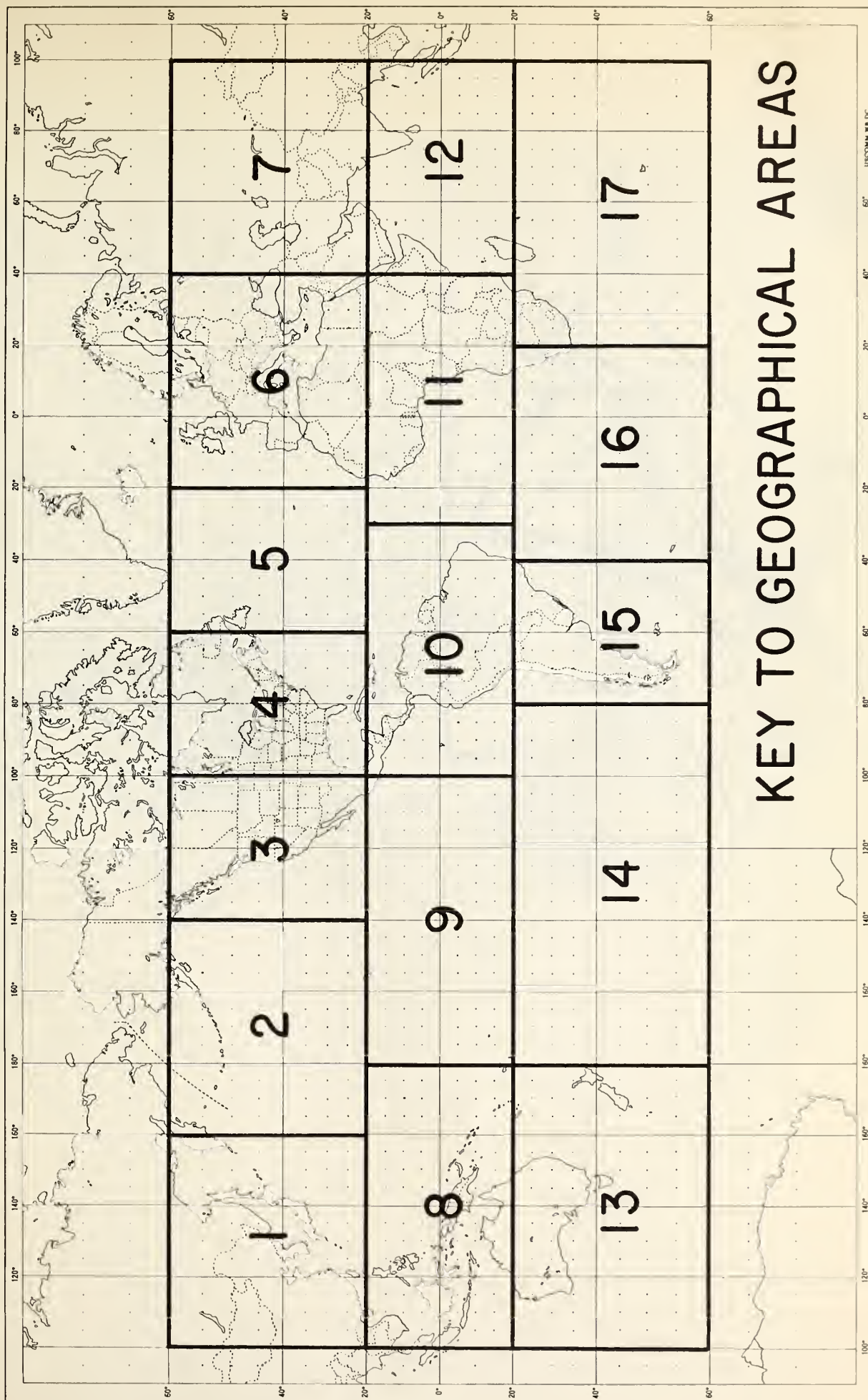
REEL	FILM	LEGEND	PICTURE SEQUENCE DATA																											
											FRAME		GEOGRAPHICAL AREA COVERED																	LVBSC
	PASS	M	C	S	PASS	M	C	DATE	TIME	TI	US	+	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
423	0979	T	2	W	0978	T	2	0417	1610	30	21	21					4	5	6											30200
423	0979	T*	2	W	0979	D	2	0417	1740	10	01	01					4													00000
423	0980	T	2	W	0979	T	2	0417	1748	30	30	30					4	5	6											00323
423	0980	T	1	W	0980	T	1	0417	1910	30	31	31					4	5												30323
423	0980	D	1	W	0980	D	1	0417	1930	10	10	10					4					10								00302
459	0981	T	1	P	0981	T	1	0417	2050	30	31	31	1	2																01222
459	0982	T*	1	P	0982	D	1	0417	2247	30	02	11			3															30222
423	0990	T	1	W	0982	T	1	0417	2240	30	04	21																		30303
423	0990	T	2	W	0983	T	2	0418	0025	30	31	31			2	3					9									00303
423	0990	T*	2	W	0990	D	2	0418	1149	30	02	02					4													00000
423	0991	C	2	W	0991	D	2	0418	1330	10	22	22				3	4													32200
423	0991	T	2	W	0990	T	2	0418	1155	30	29	29					4	5	6											00230
423	0991	T	1	W	0990	T	1	0418	1210	30	30	30						6	7					12						30303
423	0992	C	2	W	0992	D	2	0418	1516	10	30	30					4													30200
423	0992	T	2	W	0991	T	2	0418	1352	30	31	26						6				11								32210
423	0993	C	2	W	0993	D	2	0418	1702	10	21	21					4													30200
423	0993	T	2	W	0992	T	2	0418	1530	30	32	32						5	6			11								30203
423	0994	T	2	W	0993	T	2	0418	1710	30	31	30						5				11								20111
423	0994	T	1	W	0994	T	1	0418	1834	30	29	30			2	3														23303
423	0994	D	1	W	0994	D	1	0418		10	00	00					4													00000
459	0995	C	1	P	0995	D	1	0418	2022	10	00	00					3													00000
459	0995	T	1	P	0994	T	1	0418	1857	30	14	12					4	5												00222
459	0995	C	1	P	0995	D	1	0418	2027	10	00	00					3													00000
459	0996	T	1	P	0996	T	1	0418	2154	30	20	31	1	2																00300
459	0996	C	2	P	0996	D	2	0418	2214	10	21	22			3															00000
424	1004	T	1	W	0999	T	1	0419	0305	30	30	30	1						7											33311
424	1004	T	2	W	0997	T	2	0418	2345	30	31	31			2	3					9									00303
424	1004	C	2	W	1004	D	2	0419	1112	30	02	02					4													00000
424	1005	T	1	W	1004	T	1	0419	1135	30	30	31						6	7			11	12							30302
424	1005	T	2	W	1004	T	2	0419	1120	30	29	29						5	6											00332
424	1005	C	2	W	1005	D	2	0419	1257	10	22	22					4	5												30200
424	1006	C	2	W	1006	D	2	0419	1448	10	23	23					4													30000
424	1006	T	2	W	1005	T	2	0419	1320	30	22	17						6				11								30002
424	1007	D	2	W	1007	D	2	0419	1625	10	18	18					4													20200
424	1007	T	1	W	1005	T	1	0419	1305	30	30	30						5	6											23302
424	1007	T	2	W	1006	T	2	0419	1500	30	24	21						6				11								30303
424	1008	T	1	W	1008	T	1	0419	1800	30	31	31																		02332
424	1008	T	2	W	1007	T	2	0419	1643	30	22	14										11				16				20332
424	1008	T*	2	W	1008	D	2	0419	1815	30	01	01					4													00200
424	1009	T	1	W	1009	T	1	0419	1937	30	31	31	2	3																00313
424	1009	T	2	W	1008	T	2	0419	1820	30	19	16					4	5				10								00303
424	1009	T*	2	W	1009	D	2	0419	10	00	00																			00000
424	1009	T*	1	W	1009	D	1	0419	2000	10	09	09					4					10								10000
424	1018	C*	2	W	1009	T	2	0419	2000	30	08	07										10								20000
425	1019	T	1	W	1018	T	1	0420	1100	30	31	27						6	7					12						30000
425	1019	T	2	W	1018	T	2	0420	1045	30	30	30						5	6											30302
425	1020	C	2	W	1020	D	2	0420	1404	10	33	33					4													00100
425	1020	T	2	W	1019	T	2	0420	1225	30	30	30					4	5	6											33322
425	1021	C	2	W	1021	D	2	0420	1548	10	16	16					4													00000
425	1021	T	2	W	1020	T	2	0420	1415	30	30	30						5	6			11								30302
425	1021	T	1	W	1019	T	1	0420	1240	30	31	25						6				11	12							30003
425	1022	T*	1	W	1022	D	1	0420	1738	30	01	01					4													00300
425	1022	C	2	W	1022	D	2	0420	1738	30	03	03					4													00300
425	1023	T	1	W	1022	T	1	0420	1745	30	29	20						5				10								00302
425	1023	T	2	W	1022	T	2	0420	1742	30	26	21					4	5				10								20302
425	1023	T*	2	W	1023	D	2	0420	1925	30	02	01																		00000
425	1032	T	1	W	1024	T	1	0420	2048	30	31	31			2	3														30203
425	1032	T	2	W	1023	T	2	0420	1928	30	07	04										10								20002
425	1033	T*	2	W	1033	D	2	0421	1139	30	00	00																		00000
425	1033	T*	1	W	1033	D	1	0421	1142	30	03	03					4													30000
425	1034	C	1	W	1034	D	1	0421	1325	10	04	04																		00000
425	1034	T	1	W	1033	T	1	0421	1150	30	24	24					4	5	6											23323
425	1034	T	2	W	1033	T	2	0421	1140	30	21	21					4	5	6											23323
426	1035	C	2	W	1035	D	2	0421	1510	10	19	19					4													20000
426	1035	T	2	W	1034	T	2	0421	1340	30	30	30					4	5	6											32322
426	1035	T	1	W	1034	T	1	0421	1350	30	31	18						6				11								30002
426	1036	T*	2	W	1036	D	2	0421	1659	30	04	04					4													33200
426	1036	T	1	W	1035	T	1	0421	1525	30	30	30					4	5												

REEL	FILM	LEGEND				PICTURE SEQUENCE DATA																										
		PASS	M	C	S	PASS	M	C	DATE	TIME	FRAME			GEOGRAPHICAL AREA COVERED																	LVBSC	
											T	U	S	+	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		17
430	1122	T	2	W	1121	T	2	0427	1526	30 00 00																						00000
430	1122	T*	2	W	1122	D	2	0427	1653	30 01 01																						00000
460	1123	C	2	P	1123	D	2	0427	1826	10 25 25								3														30303
460	1123	T	2	P	1122	T	2	0427	1700	30 24 15								4						10								30023
460	1123	T	1	P	1123	T	1	0427	1818	30 17 17								2														00210
460	1124	C	1	P	1124	D	1	0427	2014	10 08 08								3														00000
460	1124	T	1	P	1123	T	1	0427	1840	30 29 25								3	4													30202
430	1131	T	1	W	1124	T	1	0427	2035	30 21 15								2	3					9								00222
430	1131	T	2	W	1125	T	2	0427		30 00 00																						00000
430	1132	T	1	W	1131	T	1	0428	0750	30 31 31										6	7					12						30303
430	1132	T	2	W	1131	T	2	0428	0805	30 20 20																12						00000
430	1133	T	1	W	1132	T	1	0428	0930	30 31 31										6				11								30222
430	1133	T	2	W	1132	T	2	0428	0945	30 28 21										6				11	12							30000
430	1134	T	2	W	1133	T	2	0428	1130	30 11 06														11	12							30300
430	1134	T	1	W	1133	T	1	0428	1120	30 31 31										5	6											30203
430	1134	T*1		W	1134	D	1	0428	1247	30 02 02										4												00000
430	1135	C	1	W	1135	D	1	0428	1430	10 16 16										4												30300
430	1135	T	1	W	1134	T	1	0428	1254	30 29 29										5	6			11								30200
430	1135	T	2	W	1134	T	2	0428		30 00 00																						00000
430	1135	T*	2	W	1135	D	2	0428	1433	30 02 02										4												00000
431	1136	C	2	W	1136	D	2	0428	1610	10 13 13										4												00002
431	1136	T	2	W	1135	T	2	0428	1442	30 29 29										4	5			10								00002
431	1145	T	2	W	1136	T	2	0428	1629	30 24 14														10								00003
431	1145	T	1	W	1136	T	1	0428	1625	30 27 27														10								00003
431	1146	T	2	W	1145	T	2	0429	0720	30 23 23																12						30000
431	1147	T	1	W	1146	T	1	0429	0910	30 21 21															11	12						30000
431	1147	T	2	W	1146	T	2	0429	0855	30 31 31										5	6				11	12						30303
431	1148	T	2	W	1147	T	2	0429	1050	30 24 19															11	12						30300
431	1148	T	1	W	1147	T	1	0429	1050	30 29 24															11	12						30300
431	1148	C	1	W	1148	D	1	0429	1210	30 01 01										4												00000
431	1149	T	2	W	1148	T	2	0429	1230	30 06 13														11								30023
431	1149	T	1	W	1148	T	1	0429	1219	30 29 29										5	6			11								30003
431	1150	C	1	W	1150	D	1	0429	1535	10 08 08										4												00200
431	1150	T	1	W	1149	T	1	0429	1402	30 32 32										4	5			10								02023
431	1150	T	2	W	1149	T	2	0429	1402	30 32 28										4	5			10								02023
460	1151	C	1	P	1151	D	1	0429	1713	10 16 16										3												00020
460	1152	C	2	P	1152	D	2	0429	1857	10 27 27																						00000
431	1160	T	1	W	1152	T	1	0429	1904	30 30 30														9								00003
431	1160	T	2	W	1153	T	2	0429	2040	30 31 31										2	3			9								00003
432	1161	T	1	W	1160	T	1	0430	0820	30 31 31																11	12					32002
432	1161	T	2	W	1160	T	2	0430	0835	30 31 21																12						30013
432	1162	T	2	W	1161	T	2	0430	1015	30 31 20															11	12						30003
432	1162	T	1	W	1161	T	1	0430	1000	30 31 31																						30302
432	1162	T*1		W	1162	D	1	0430	1131	30 01 01										4												30300
432	1163	C	2	W	1163	D	2	0430	1315	10 25 25																						00002
432	1163	T	2	W	1162	T	2	0430	1155	30 24 20														11								30300
432	1164	C	2	W	1164	D	2	0430	1457	10 12 12										4												00203
432	1164	T	2	W	1163	T	2	0430	1326	30 30 30										4	5			10	11							00203
432	1164	T	1	W	1162	T	1	0430	1140	30 30 30										4	5	6		11								30303
432	1164	T*1		W	1164	D	1	0430		30 00 00										4												00000
460	1165	C	1	P	1165	D	1	0430		10 00 00										3												00000
460	1165	T	1	P	1164	T	1	0430	1510	30 30 30										4				10								30022
461	1166	T	1	P	1165	T	1	04304																								

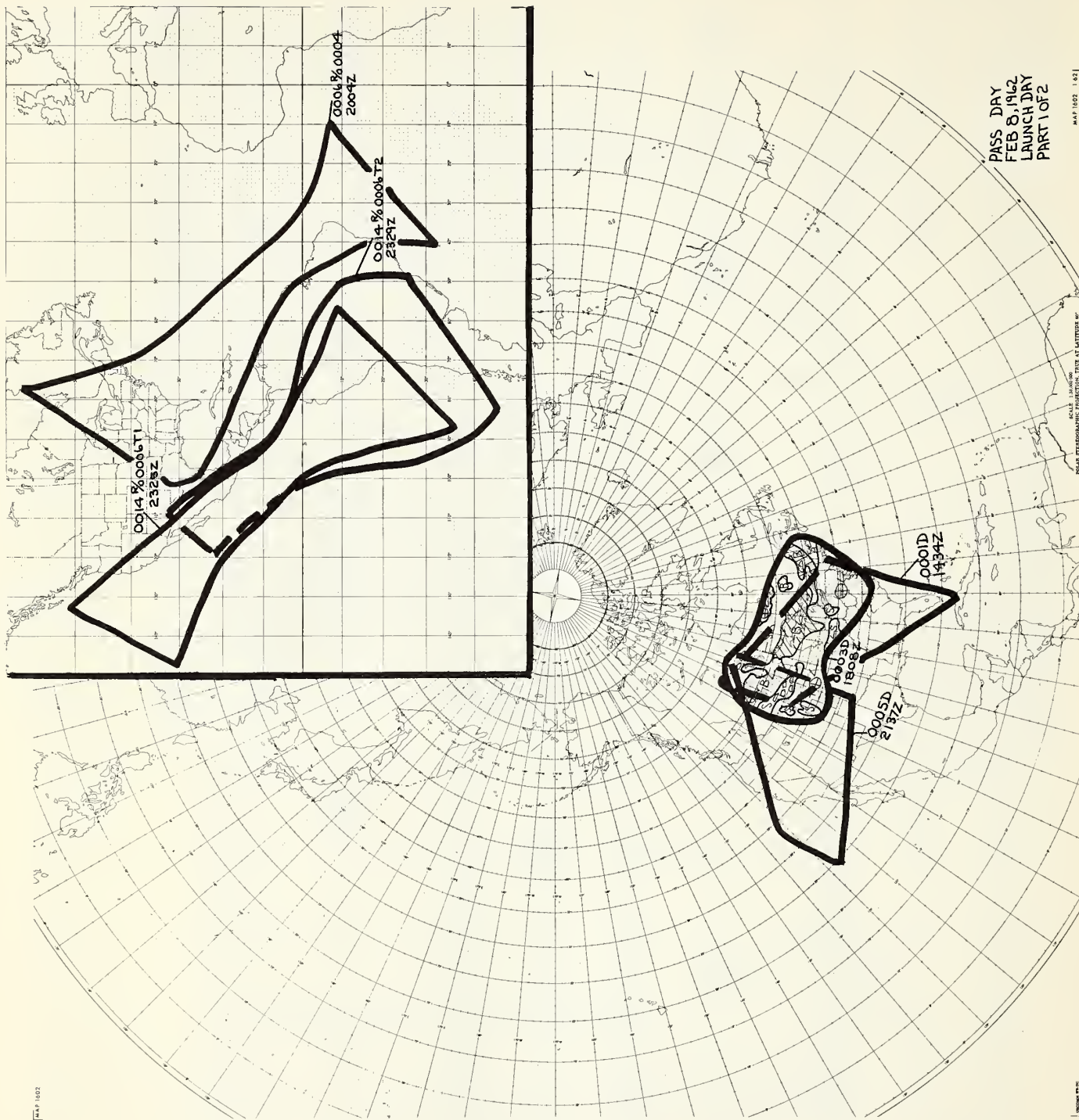
REEL	FILM	LEGEND	PICTURE SEQUENCE DATA																													
									FRAME		GEOGRAPHICAL AREA COVERED																	LVBSC				
			PASS	M	C	S	PASS	M	C	DATE	TIME	TI	US	+	1	2	3	4	5	6	7	8	9	10	11	12	13		14	15	16	17
461	1194	T* 2 P	1194	D	2	0502	1712	30	03	03					3																	30000
434	1202	T 2 W	1194	T	2	0502	1720	30	28	28					3							9	10									30002
434	1202	T 1 W	1196	T	1	0502	2046	30	31	20					3							9										00202
434	1203	T 1 W	1202	T	1	0503	0647	30	31	23																12						30002
434	1204	T 2 W	1203	T	2	0503	0815	30	31	31										6					11							30000
434	1204	T 1 W	1203	T	1	0503	0826	30	31	25													10						15	16		20000
434	1205	T 2 W	1204	T	2	0503	1008	30	31	25															11							20203
434	1205	T 1 W	1204	T	1	0503	0955	30	31	31										5	6				11							30013
434	1205	C 1 W	1205	D	1	0503	1128	10	11	11					4																	00000
434	1206	D 2 W	1206	D	2	0503	1310	10	19	19					4																	00000
434	1206	T 1 W	1205	T	1	0503	1140	30	32	32										5				10	11							00321
434	1206	T*1 W	1206	D	1	0503	1314	30	01	01					4																	00000
461	1207	D 1 P	1207	D	1	0503	1447	30	01	01					3																	00000
461	1207	T 1 P	1206	T	1	0503	1322	30	30	30														10								20300
461	1207	T* 2 P	1207	D	2	0503	1453	30	02	02					4																	20000
461	1208	D 1 P	1208	D	1	0503	1632	10	04	04																						00313
434	1216	T 1 W	1210	T	1	0503		30	00	00																						00000
434	1218	T 1 W	1217	T	1	0504	0753	30	24	22															11	12						30003
434	1219	T 1 W	1218	T	1	0504	0915	30	25	25										5	6											32303
434	1220	T 1 W	1219	T	1	0504	1100	30	31	31										4	5			10	11							30333
461	1221	T 1 P	1220	T	1	0504	1248	30	31	31															10	11						20332
461	1222	T 1 P	1222	T	1	0504	1553	30	08	08					2	3																00213
434	1230	C*1 W	1224	T	1	0504	1925	30	31	31					2								9						14			00003
434	1231	T 1 W	1230	T	1	0505	0525	30	31	31																11	12					30003
435	1233	T 1 W	1231	T	1	0505	0706	30	31	31																11						30000
435	1234	T 1 W	1233	T	1	0505	1025	30	31	31																	11					30323
435	1235	T 1 W	1234	T	1	0505	1205	30	32	32																	11					00333
461	1236	D 1 P	1236	D	1	0505	1518	30	03	04										4	5				10	11						00000
461	1236	T 1 P	1235	T	1	0505	1357	30	31	30															10					15	16	20023
461	1237	T*1 P	1237	D	1	0505	1707	10	09	10					3																	00103
435	1244	D*1 W	1237	T	1	0505	1715	30	25	25														9	10				14			00002
435	1245	T 1 W	1244	T	1	0506	0450	30	31	31																11	12					32203
435	1246	T 1 W	1245	T	1	0506	0630	30	31	31																						30003
435	1247	T 1 W	1246	T	1	0506	0810	30	31	31																	11					30303
435	1248	T 1 W	1247	T	1	0506	0950	30	31	31																	11					30332
435	1249	T 1 W	1248	T	1	0506	1132	30	31	31																		11				00123
461	1250	D 1 P	1250	D	1	0506	1442	V	08	08					3																	00202
461	1250	T 1 P	1249	T	1	0506	1315	30	27	27																						30030
461	1251	D 1 P	1251	D	1	0506	1628	V	02	02					3																	00322
461	1251	T 1 P	1249	T	1	0506	1308	30	04	04																						30320
435	1259	T 1 W	1251	T	1	0506		30	00	00																						00000
435	1260	T 1 W	1259	T	1	0507	0555	30	31	31																						30203
435	1261	T 1 W	1260	T	1	0507	0735	30	31	31																						30000
435	1262	T 1 W	1261	T	1	0507	0910	30	10	10																						00303
436	1263	T 1 W	1262	T	1	0507	1055	30	31	31																						00333
461	1264	D 1 P	1264	D	1	0507	1408	V	02	02					3																	20200
461	1264	T 1 P	1263	T	1	0507	1238	30	16	16																						30220
462	1265	T 1 P	1263	T	1	0507	1238	30	12	12																						30220
462	1265	D 1 P	1265	D	1	0507	1555	10	05	05					3																	00000
436	1274	T 1 W	1273	T	1	0508		30	00	00																						00000
436	1275	T 1 W	1274	T	1	0508	0700	30	31	31																						00003
436	1276	T 1 W	1275	T	1	0508	0842	30	31	31																						30003
436	1277	T 1 W	1276	T	1	0508	1025	30	31	31																						00203
436	1277	C 1 W	1277	D	1	0508		10	00	00																						00000
462	1278	T 1 P	1277	T	1	0508	1209	30	31	31																						30300
462	1278	D 1 P	1278	D	1	0508		V	00	00																						00000
462	1279	C 1 P	1279	D	1	0508	1518	10	28	28																						00203
462	1279	T 1 P	1278	T	1	0508		V	00	00																						00000
436	1287	T 1 W	1281	T	1	0508	1843	30	31	31					2																	00222
436	1288	T 1 W	1287	T	1	0509	0449	30	31	31																						30000
436	1289	T 1 W	1288	T	1	0509	0628	30	31	31																						30000
436	1290	T 1 W	1289	T	1	0509	0810	30	31	31																						30000
436	1291	T 1 W	1290	T	1	0509	0950	30	31	31																						00333
436	1292	T 1 W	1291	T	1	0509	1130	30	31	31																						32200
436	1292	T*1 W	1292	D	1	0509	1303	30	01	01																						00000
462	1293	T 1 P	1292	T	1	0509	1310	30	31	31					3	4																

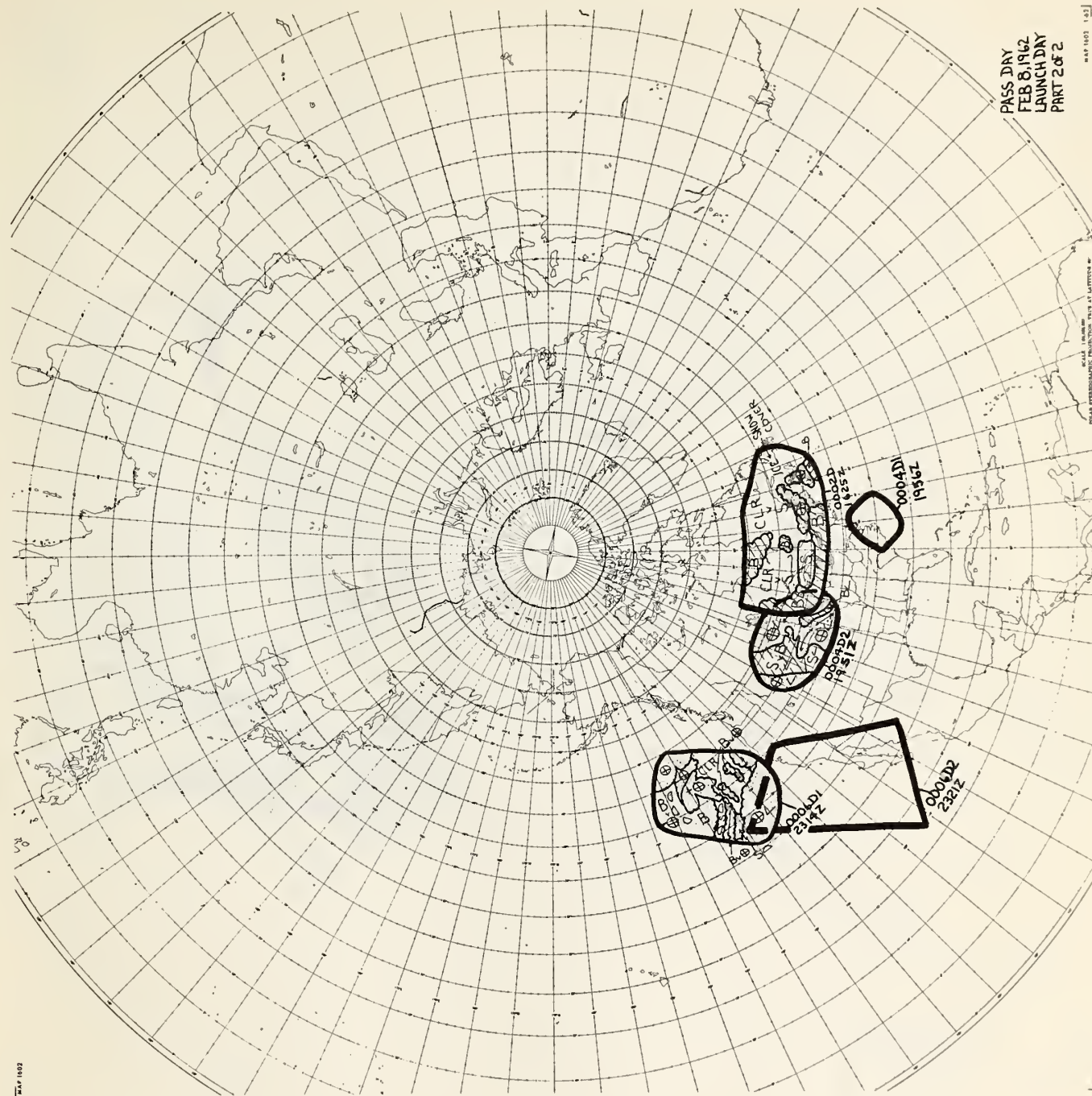
REEL	FILM	LEGEND				PICTURE SEQUENCE DATA																										
		PASS	M	C	S	PASS	M	C	DATE	TIME	FRAME			GEOGRAPHICAL AREA COVERED																	LVBSC	
											TI	US	+	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17		
464	1534	T	1	P	1533	T	1	0526	0856	30	31	30		1												12						21120
441	1541	T	1	W	1540	T	1	0526	2038	30	30	30					4				9	10										20003
441	1542	C*1	W		1541	T	1	0526	2220	30	25	20					3	4				9	10									30223
464	1544	T	1	P	1543	T	1	0527	0139	30	31	31		2	3						8	9										20230
464	1545	T	1	P	1544	T	1	0527	0312	30	31	31									8					13						20200
464	1546	T	1	P	1545	T	1	0527	0501	30	31	29									8					13						22200
464	1547	T	1	P	1546	T	1	0527	0643	30	31	27		1							8											30000
464	1548	T	1	P	1547	T	1	0527	0822	30	31	28		1							8				12							30000
441	1555	T	1	W	1553	T	1	0527	1820	30	31	31						5					10									50203
441	1556	C*1	W		1555	T	1	0527	2148	30	20	16					3	4				9	10									30000
441	1557	T	1	W	1557	T	1	0527		30	00	00																				00000
441	1557	T*1	W		1557	D	1	0527		30	00	00																				00000
464	1559	T	1	P	1558	T	1	0528	0235	30	31	31			2						8					13						30231
464	1560	T	1	P	1560	T	1	0528	0424	30	17	17									8				12							00120
464	1561	T	1	P	1561	T	1	0528	0608	30	12	12				2					8											00320
464	1562	T	1	P	1562	T	1	0528	0749	30	13	13		1							8											30000
441	1571	C*1	W		1571	T	1	0528	2253	30	10	09						3														30000
441	1572	T	1	W	1571	T	1	0529	0035	V	08	13					2	3														20002
465	1573	T	1	P	1573	T	1	0529	0214	30	06	10									9											00211
465	1575	T	1	P	1575	T	1	0529		30	18	18			2																	00000
465	1576	T	1	P	1576	T	1	0529	0718	V	18	18		1							8											30200
441	1584	C	1	W	1584	D	1	0529	2039	V	06	25					4	5														02110
441	1584	T	1	W	1583	T	1	0529		V	00	00																				00000
441	1585	C	1	W	1585	D	1	0529		V	00	00																				00000
441	1585	T	1	W	1584	T	1	0529		V	00	00																				00000
441	1586	T	1	W	1584	T	1	0529	2220	V	12	15			2	3																03303
441	1587	T	1	W	1586	T	1	0530	0120	V	31	31									8	9				13						30222
465	1588	T	1	P	1587	T	1	0530	0301	V	30	30									8					13						32323
465	1591	T	1	P	1590	T	1	0530	0812	V	31	31								7				12								20022
441	1598	C	1	W	1598	D	1	0530		V	00	00																				00000
441	1598	C*1	W		1596	T	1	0530		V	30	30											10									10000
441	1599	T	1	W	1598	T	1	0530	2124	V	29	29				3					9											00000
442	1600	T	1	W	1599	T	1	0530	2117	V	01	01																				00000
442	1601	T	1	W	1600	T	1	0531	0048	V	31	31									8	9				13						30223
465	1602	T	1	P	1601	T	1	0531	0228	V	31	31									8					13						32312
442	1603	T	1	W	1602	T	1	0531	0422	V	31	31				2					8											00200
465	1604	T	1	P	1603	T	1	0531		V	00	00																				00000
442	1613	T	1	W	1612	T	1	0531	2100	V	30	30					3					9										30000
442	1614	T	1	W	1613	T	1	0531	2250	V	29	29				2	3					9										30303
442	1615	T	1	W	1615	T	1	0601	0029	V	27	27					3					9										32303
465	1616	T	1	P	1615	T	1	0601	0155	V	23	23									8					13						30200
465	1617	T	1	P	1616	T	1	0601	0330	V	17	17									8					13						30200
465	1618	T	1	P	1618	T	1	0601	0524	V	19	19		1							8											20200
465	1619	T	1	P	1618	T	1	0601		V	16	16		1											12							00000
442	1626	C	1	W	1626	D	1	0601		V	00	09																				00000
442	1627	D	1	W	1627	D	1	0601		V	00	00																				00000
442	1627	T	1	W	1626	T	1	0601	1851	V	14	19						4	5													33333
442	1628	T	1	W	1627	T	1	0601	2205	V	31	31				2	3	4														30333
442	1629	C*1	W		1628	T	1	0601	2345	V	31	31																				00000
442	1630	T	1	W	1629	T	1	0602	0118	V	31	31																				30303
465	1633	T	1	P	1633	T	1	0602	0631	V	29	29		1																		21001
442	1640	C*1	W		1638	T	1	0602	1627	V	31	31						5					10									00333
442	1641	C	1	W	1641	D	1	0602		V	00	00																				00000
442	1641	T	1	W	1640	T	1	0602	1949	V	24	24					3	4				9										30003
442	1642	T	1	W	1641	T	1	0602	2126	V	30	30					3					9										00303
466	1643	T	1	P	1642	T	1	0602	2310	V	31	31				2	3					9										00333
466	1644	T	1	P	1643	T	1	0603	0044	V	31	31									8					13						30000
466	1645	T	1	P	1644	T	1	0603	0228	V	31	31									8											30232
466	1646	T	1	P	1645	T	1	0603	0412	V	31	31		1							8				13							21200
466	1647	T	1	P	1647	T	1	0603	0600	V	20	28		1																		20011
442	1655	C*1	W		1654	T	1	0603	1748	V	14	14							5													02313
442	1656	T	1	W	1656	T	1	0603	2058	V	29	29		1																		33333
442	1657	T	1	W	1656	T	1	0603	2235	V	31	31				2	3				8	9										20112
443	1658	D* 2*	W		1657	T	1	0604	0013	V	31	31						3			8	9										02203
443	1659	T	1	W	1658	T	1	0604	0216	V	23	22					2	3														00300
443	1669	T	1	W	1659	T	1	0604	0337	V	31	31			</																	

REEL	FILM	LEGEND				PICTURE SEQUENCE DATA																										
										FRAME			GEOGRAPHICAL AREA COVERED																	LVBS		
		PASS	M	C	S	PASS	M	C	DATE	TIME	TI	US	+	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17		
466	1689	T	1		P	1689	T	1	0606	0412	V	31	31		1	2					8											20020
467	1690	T	1		P	1690	T	1	0606	0549	V	27	27		1					7					12							30330
443	1698	T	1		W	1697	T	1	0606	1741	V	19	21					4	5	6												00003
443	1699	T	1		W	1698	T	1	0606	2049	V	31	31			2	3	4				9										23203
443	1700	T	1		W	1699	T	1	0606	2232	V	31	31			2	3				8	9										20303
443	1700	C	1		W	1700	D	1	0606		V	00	00																			00000
467	1702	T	1		P	1701	T	1	0607		V	00	00					3														00000
467	1703	T	1		P	1703	T	1	0607	0333	V	31	31		1						8											22320
467	1704	T	1		P	1704	T	1	0607	0517	V	27	31		1						8											22202
467	1714	T	1		P	1713	T	1	0607	2030	V	22	21				3	4														30220
467	1715	T	1		P	1714	T	1	0607	2325	V	21	19								8					13						10230
467	1716	T	1		P	1716	T	1	0608	0120	V	31	31		1	2																00330
467	1717	T	1		P	1717	T	1	0608	0258	V	31	31		1						8											23320
467	1718	T	1		P	1718	T	1	0608	0440	V	14	14		1										12							22222
443	1725	T	1		W	1722	T	1	0608	1125	V	31	31							6	7											30101
443	1726	T	1		W	1725	T	1	0608	1639	V	22	22					4	5	6												33312
443	1727	T	1		W	1726	T	1	0608	1935	V	31	31		1					6												30023
443	1728	T	1		W	1727	T	1	0608	2138	V	31	30				3					9										00323
467	1729	T	1		P	1728	T	1	0608	2258	V	31	31			2					8											03300
444	1739	C	1		W	1739	D	1	0609	1545	V	09	09					4														00122
444	1740	C	1		W	1740	D	1	0609	1735	V	11	18					4	5													00100
444	1741	C	1		W	1741	D	1	0609	1920	V	06	06					4	5													00000
444	1742	T*1			W	1742	D	1	0609	2104	V	03	08					4	5													00100
444	1753	T*1			W	1753	D	1	0610	1514	V	05	05					4														00200
444	1754	T*1			W	1754	D	1	0610	1653	V	15	15					4														03200
444	1755	T*1			W	1755	D	1	0610	1844	V	04	04					4														03300
444	1756	T*1			W	1756	D	1	0610	2025	V	10	10					4														00300
444	1768	T*1			W	1768	D	1	0611		V	00	15					4														10200
444	1769	T*1			W	1769	D	1	0611		V	00	20					4														00000
444	1770	C	2*		W	1770	D	1	0611		V	00	02					4														00000
444	1771	C	2*		W	1771	D	1	0611		V	00	00					4														00000
444	1782	C	2*		W	1782	D	1	0612		V	00	19																			00000
444	1783	C	1		W	1783	D	1	0612		V	00	22																			00000
444	1784	T*1			W	1784	D	1	0612		V	00	05																			00000
444	1785	T*1			W	1785	D	1	0612		V	00	14																			00000
444	1796	D	1		W	1796	D	1	0613		V	00	18																			00000
444	1797	T*1			W	1797	D	1	0613		V	00	19																			00000
444	1798	T*1			W	1798	D	1	0613		V	00	17																			00000
444	1799	T*1			W	1799	D	1	0613		V	00	17																			00000
444	1813	T*1			W	1813	D	1	0614		V	00	15																			00000
444	1824	C	1		W	1824	D	1	0615		V	00	18																			00000
445	1825	C	1		W	1825	D	1	0615		V	00	11																			00000
445	1838	D	1		W	1838	D	1	0616		V	00	08																			00000
445	1839	C	1		W	1839	D	1	0616		V	00	05																			00000
445	1853	T*1			W	1853	D	1	0617		V	20	18																			00000
445	1854	T*1			W	1854	D	1	0617		V	19	19																			00000
445	1867	C	1		W	1867	D	1	0618		V	00	15																			00000
445	1868	T*1			W	1868	D	1	0618		V	00	19																			00000



KEY TO GEOGRAPHICAL AREAS



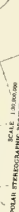


PASS DAY
FEB 8, 1962
LAUNCH DAY
PART 2 of 2

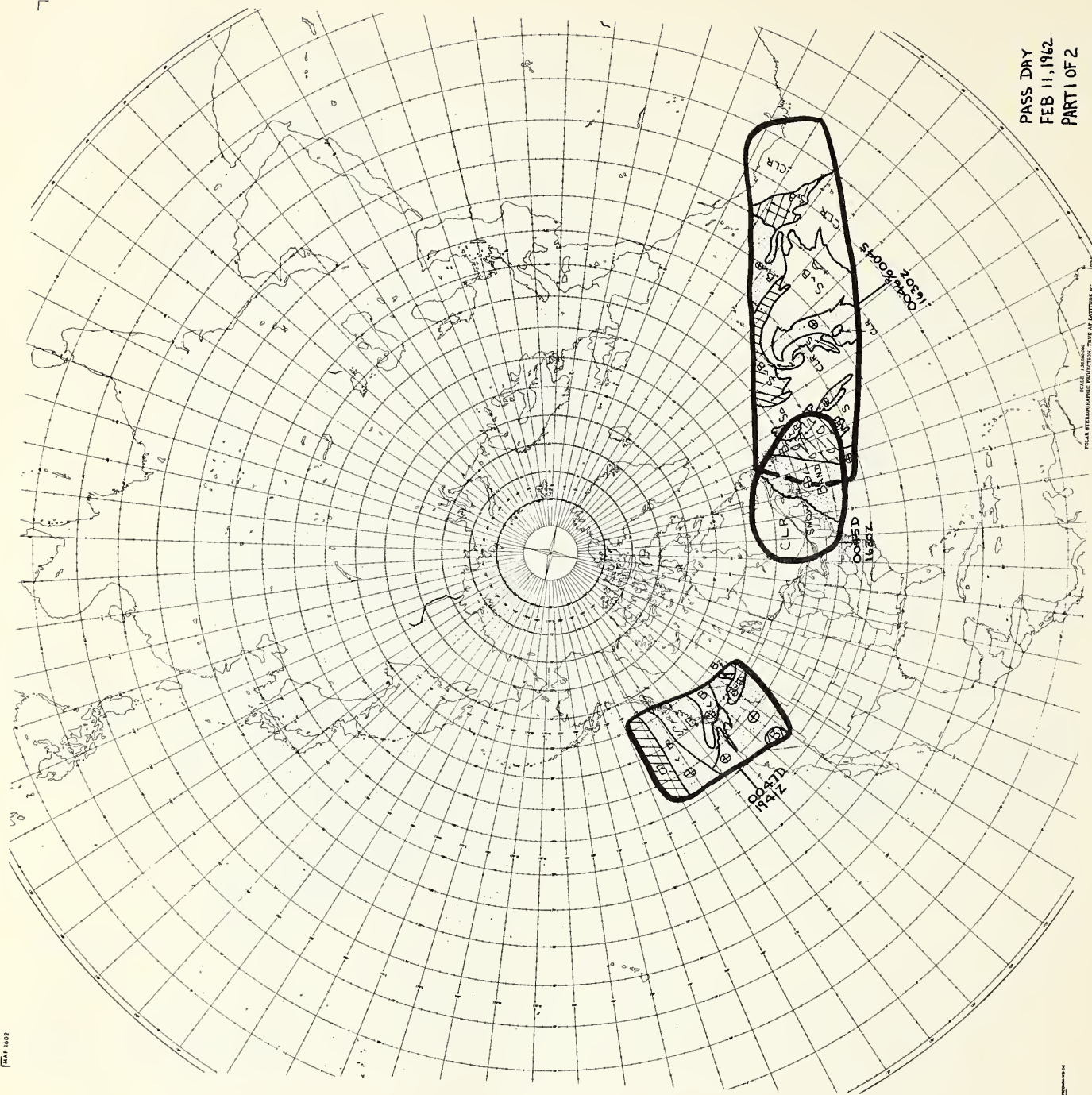
MAP 1002 1.23

MAP 1002 1.23

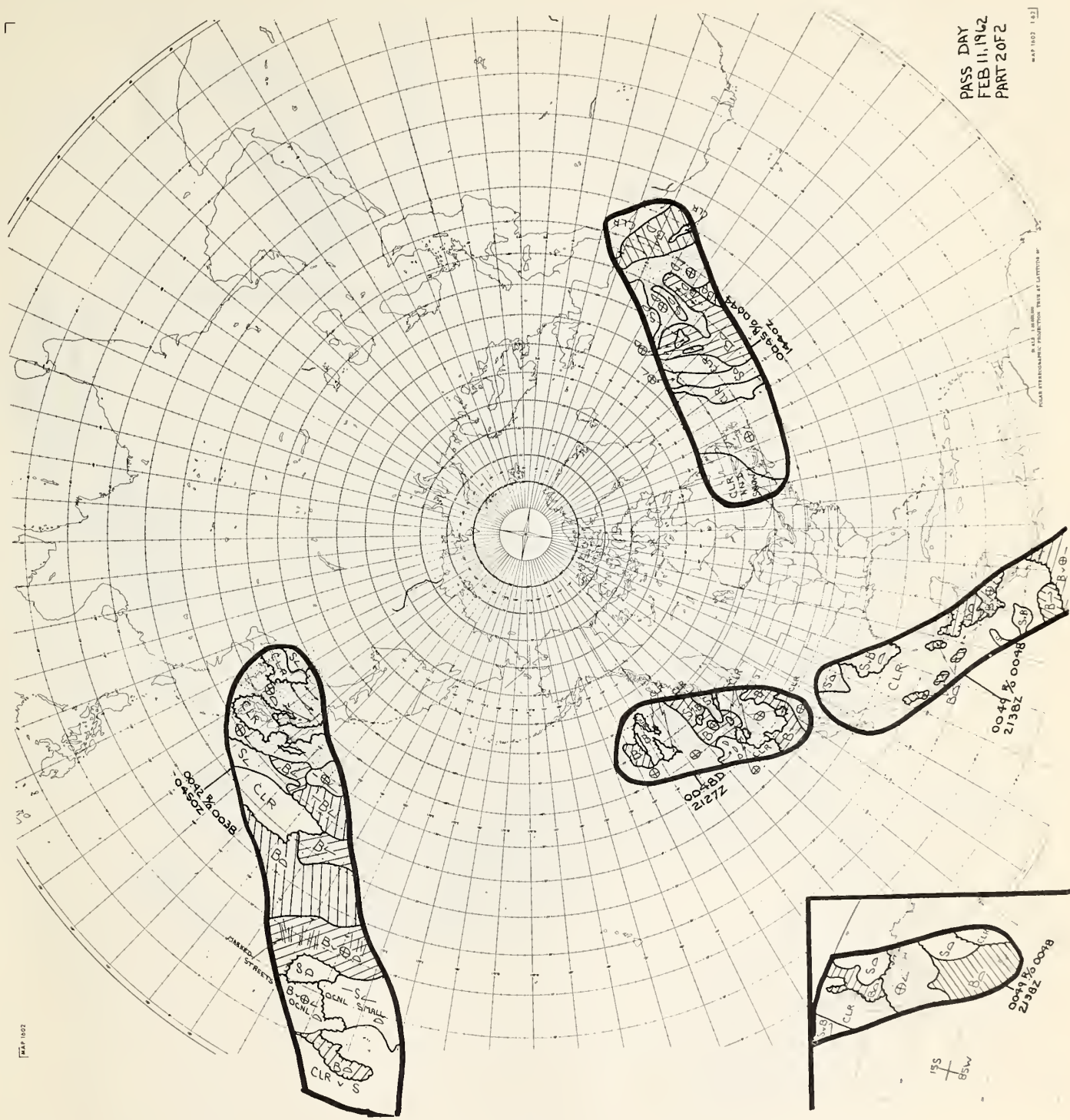
MAP 1002 1.23

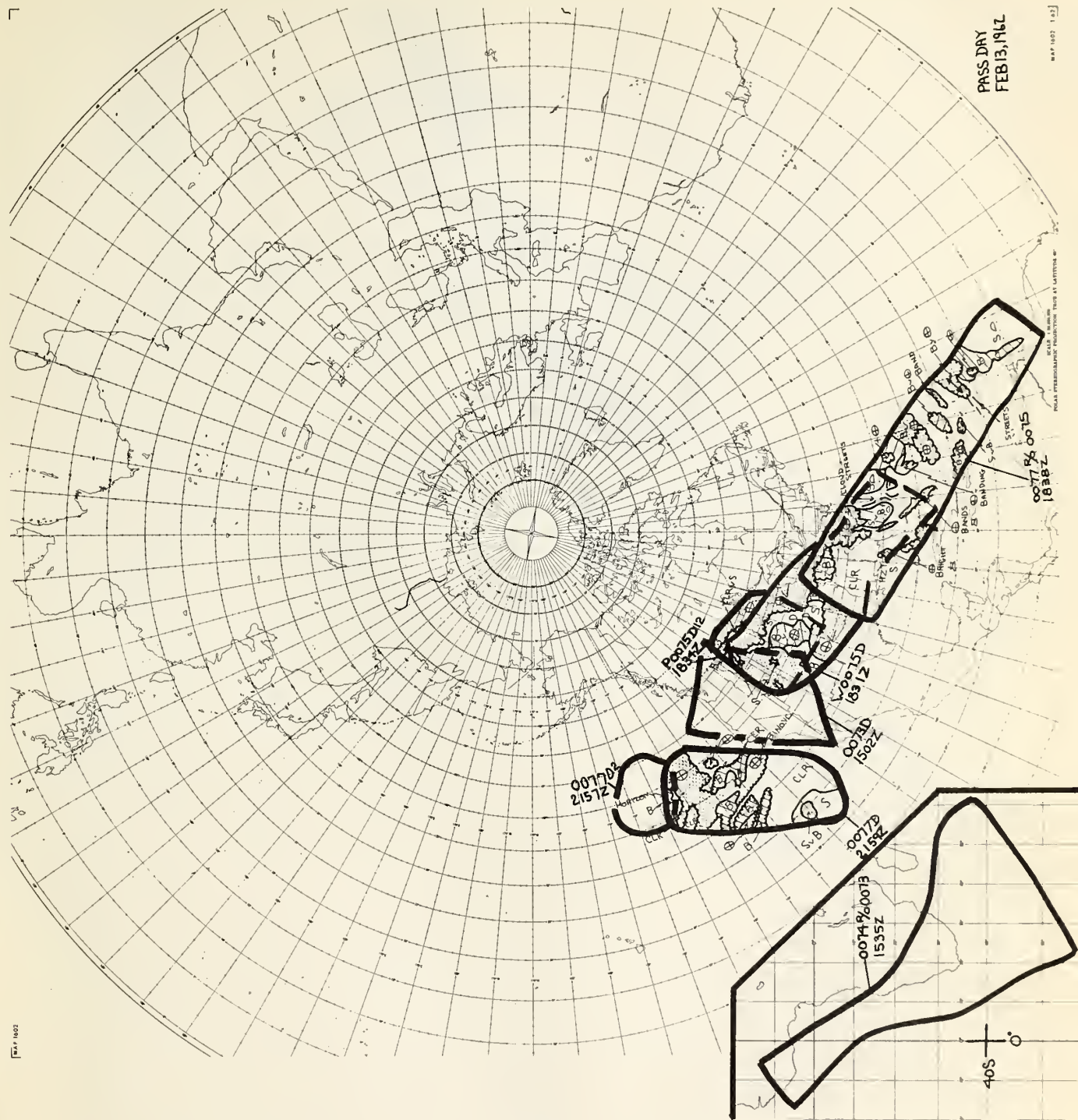


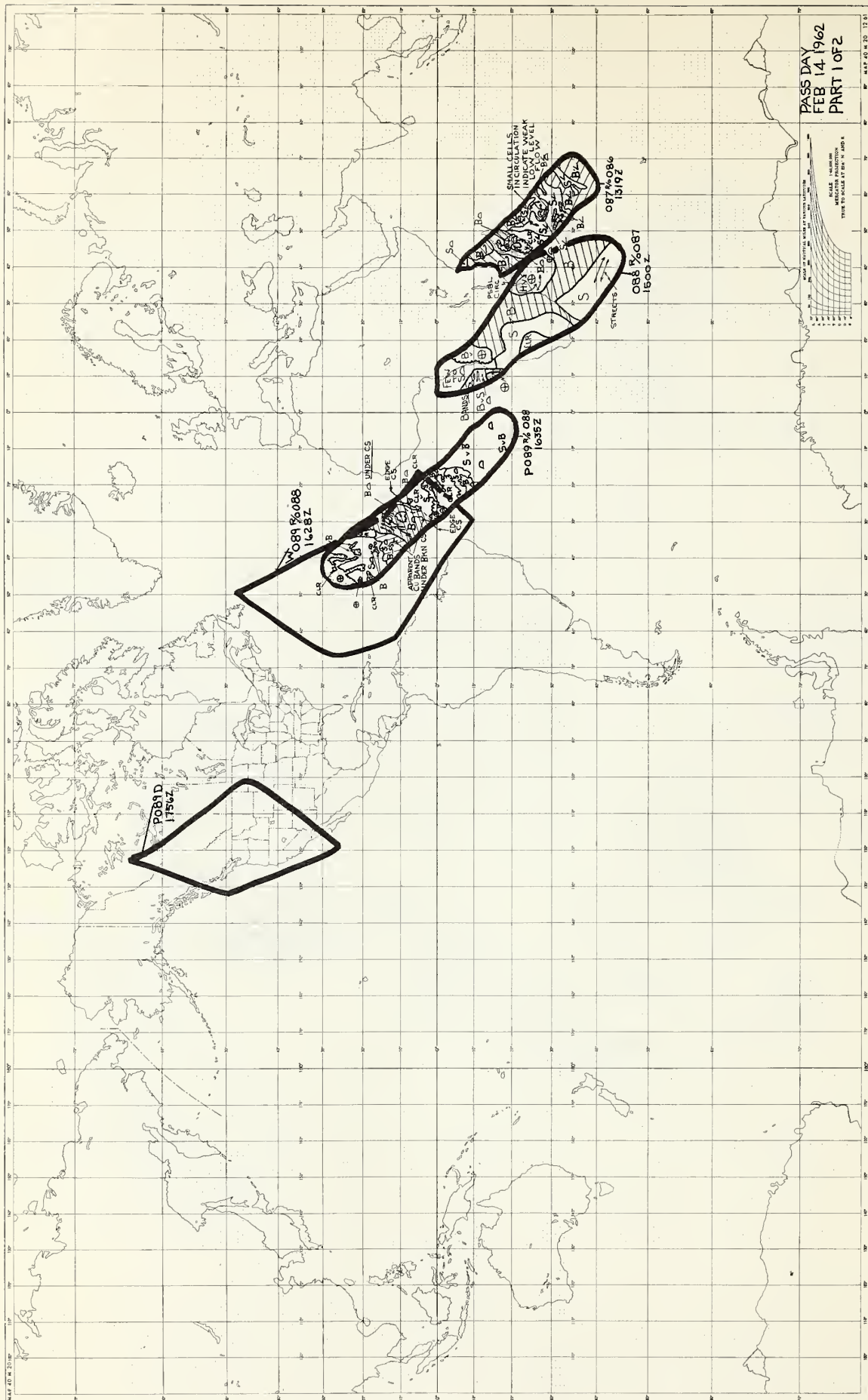




PASS DAY
FEB 11, 1962
PART 20F2







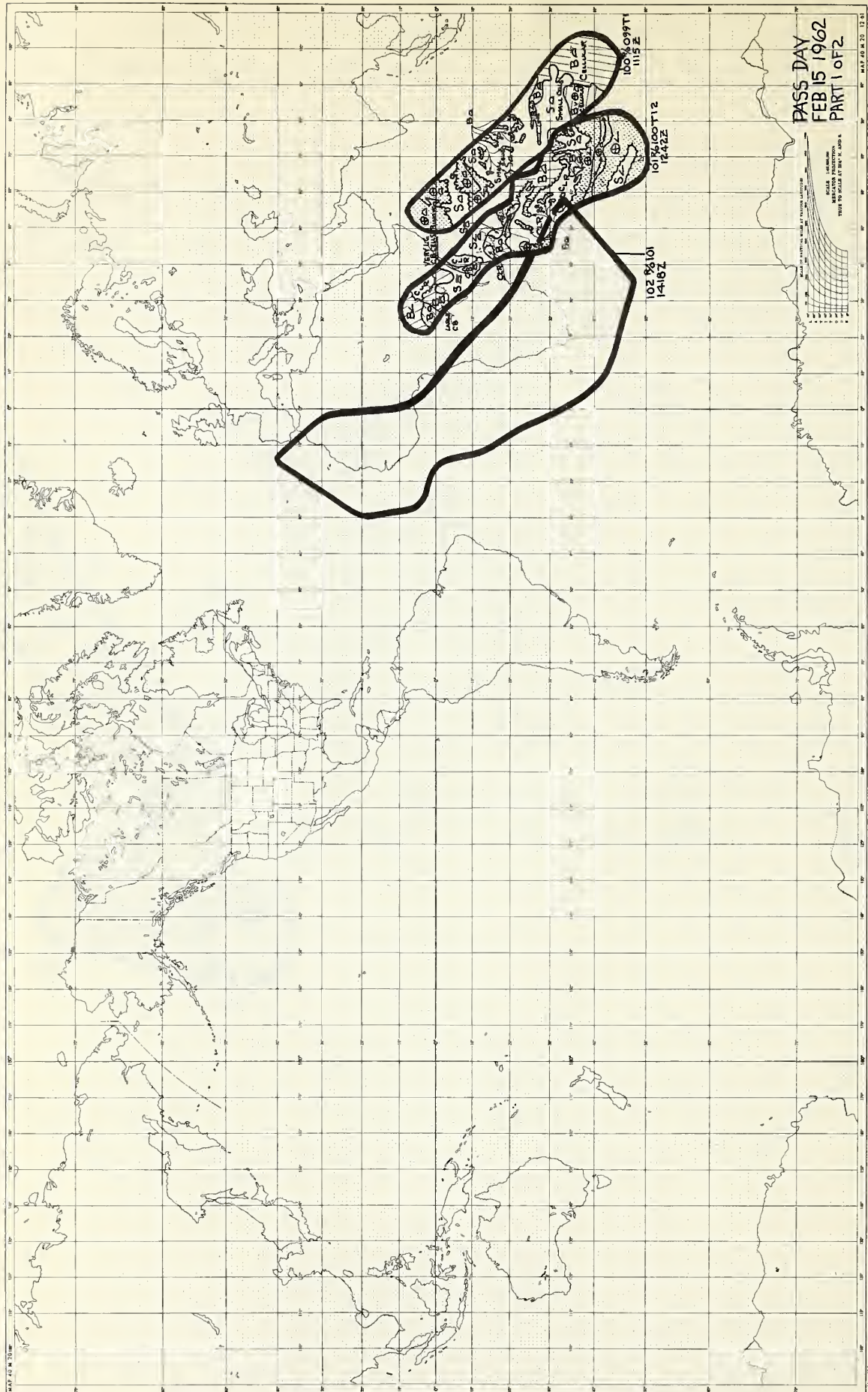
PASS DNY
FEB 14 1967
PART 2 OF 2
MAY 1967 12Z

OR # 085
1142 00

WORLD 1755Z
041900H 1730Z

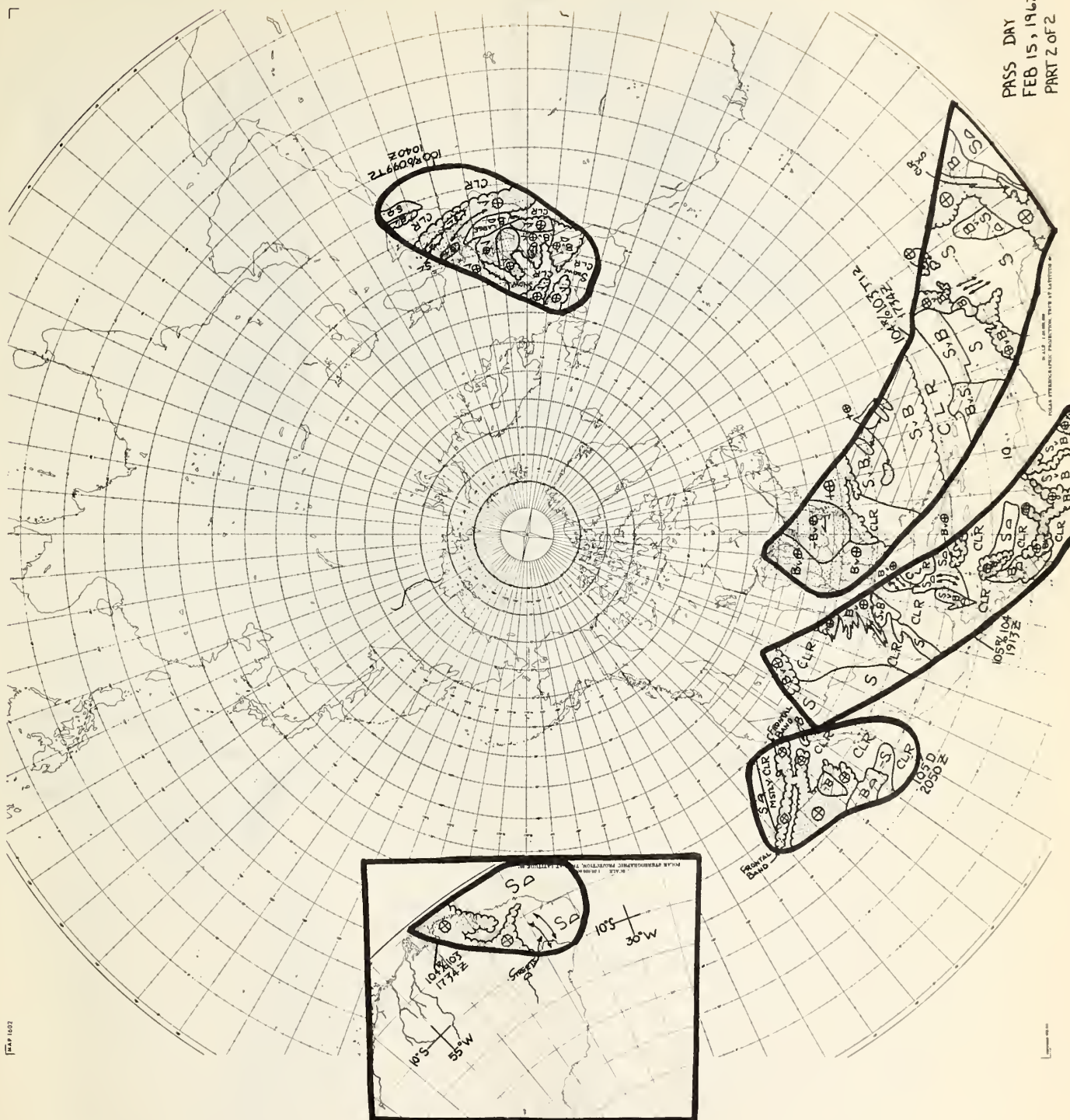
041D 2127Z

SOME BIRDS
APPEARING TO BE CIRCUS STRIPS E-W
BANDS OF C

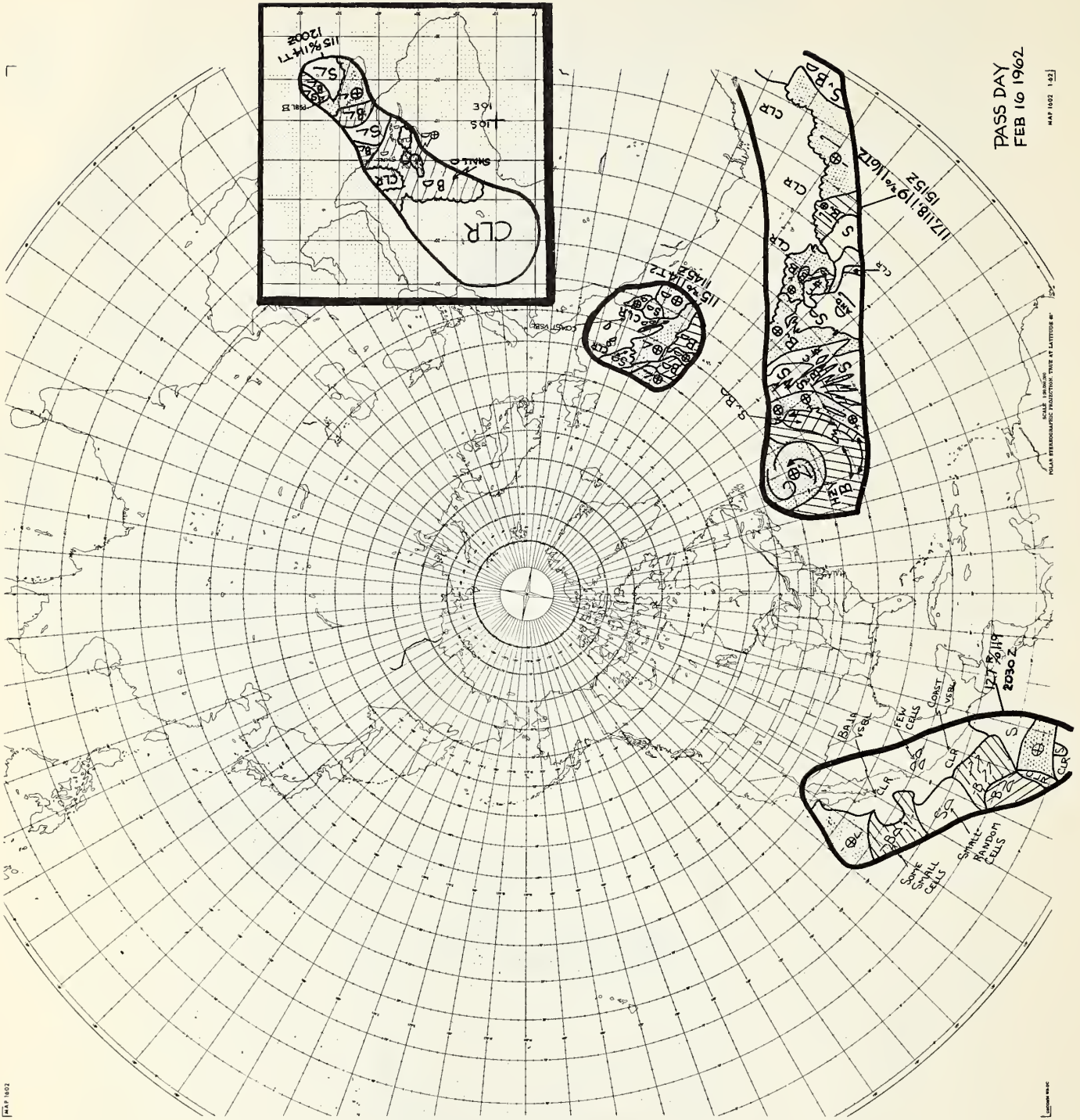


PASS DAY
FEB 15 1962
PART 1 OF 2

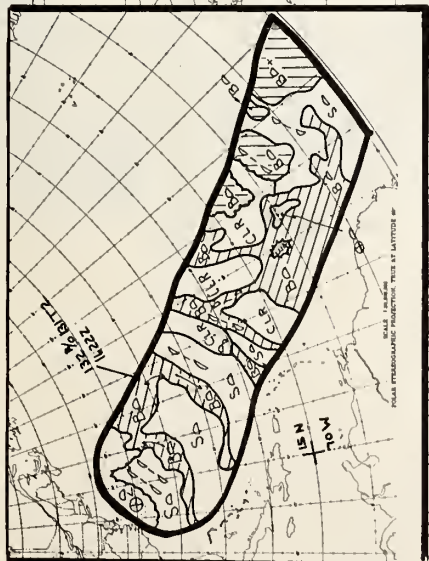
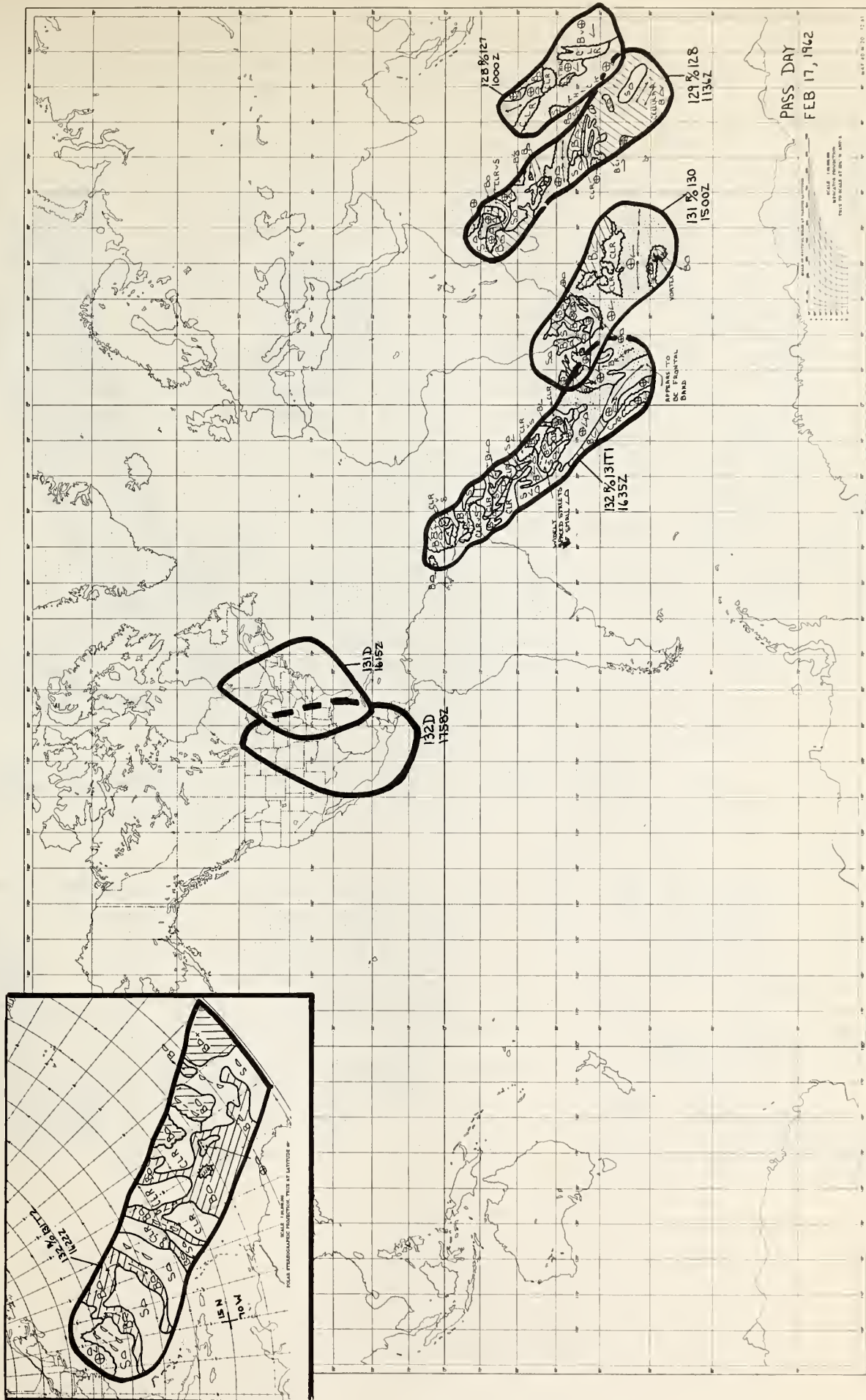
PASS DAY
FEB 15, 1962
PART 2 OF 2



MAP 1002

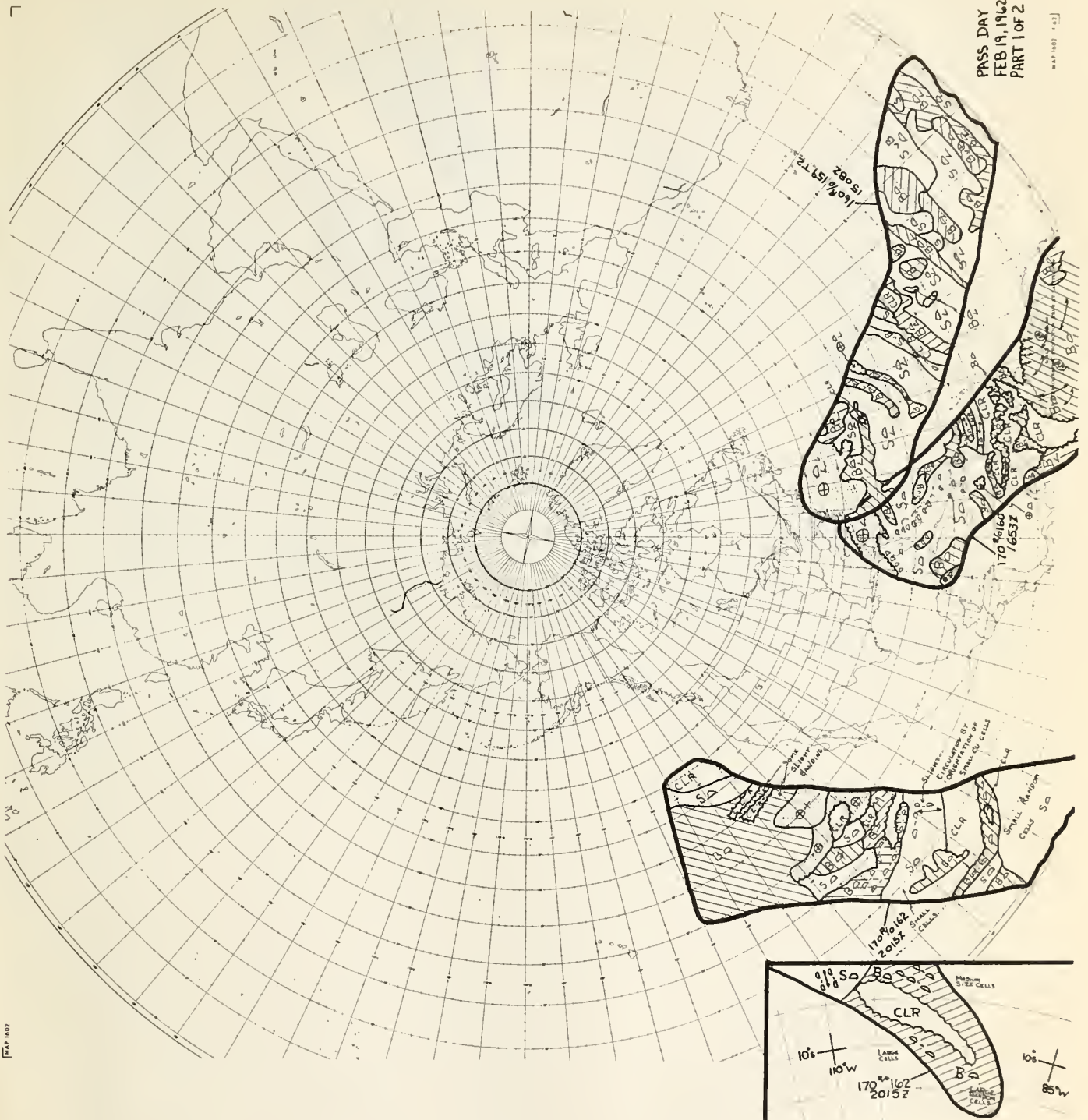


PASS DAY
FEB 16 1962



MAP 1002 1.62/



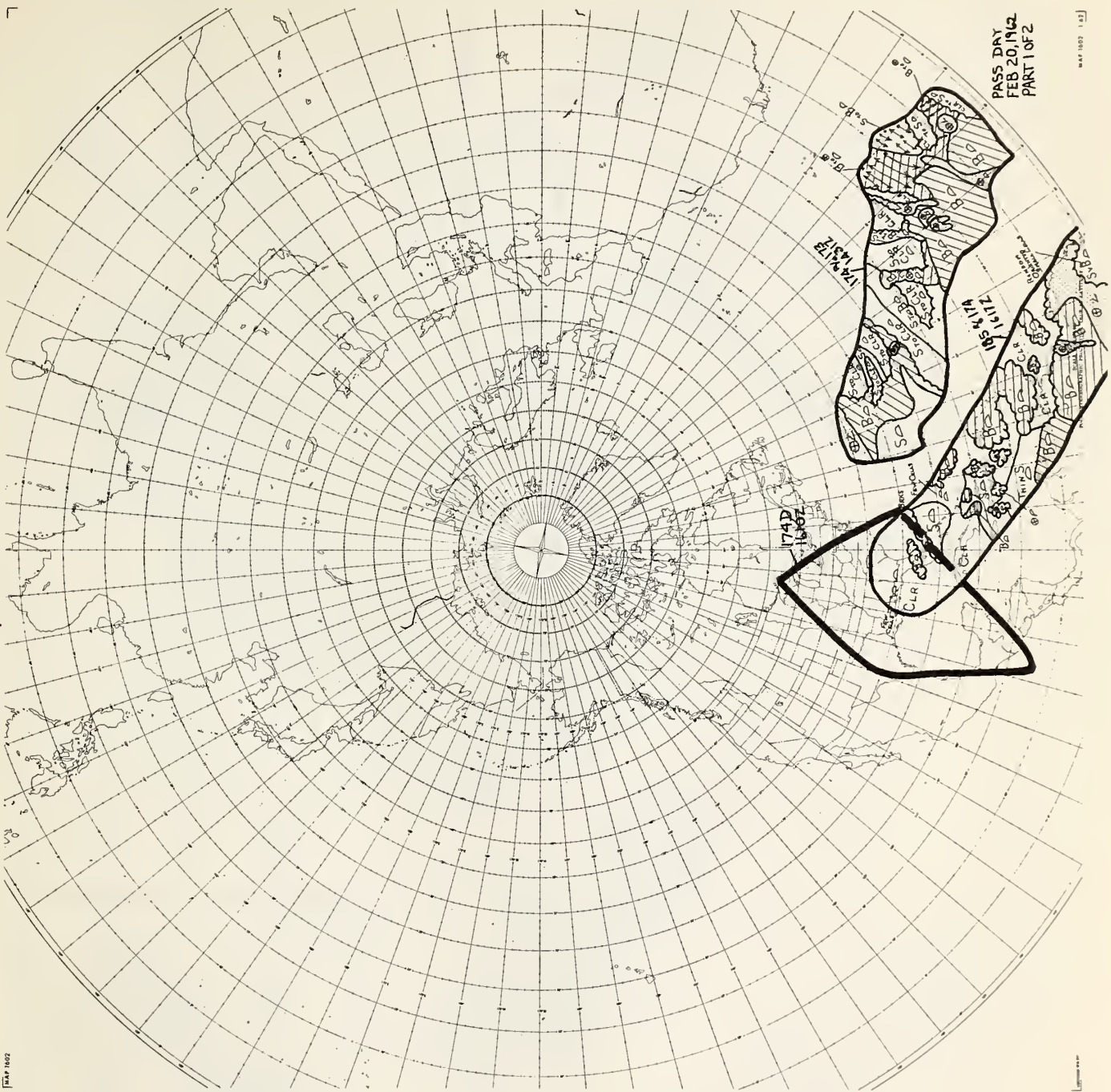


PASS DAY
FEB 19, 1962
PART 1 OF 2

MAP 1602 1603

MAP 1602

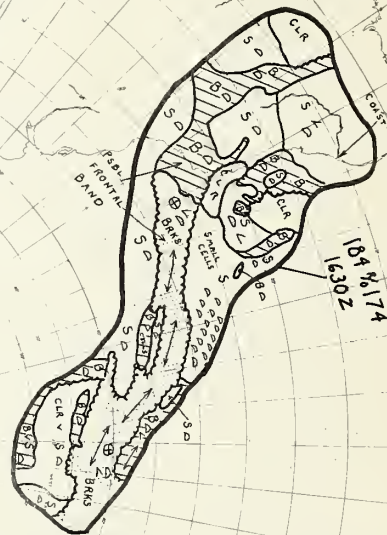
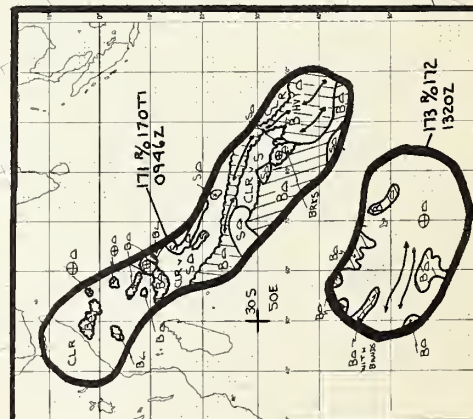
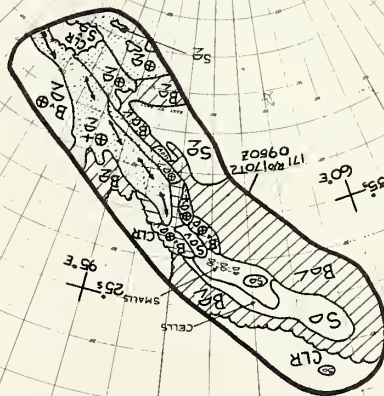
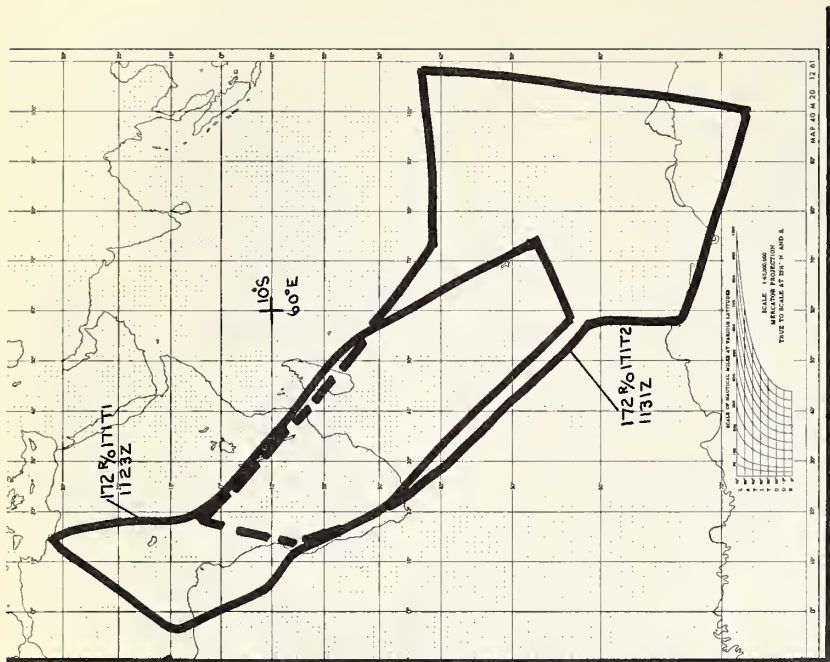




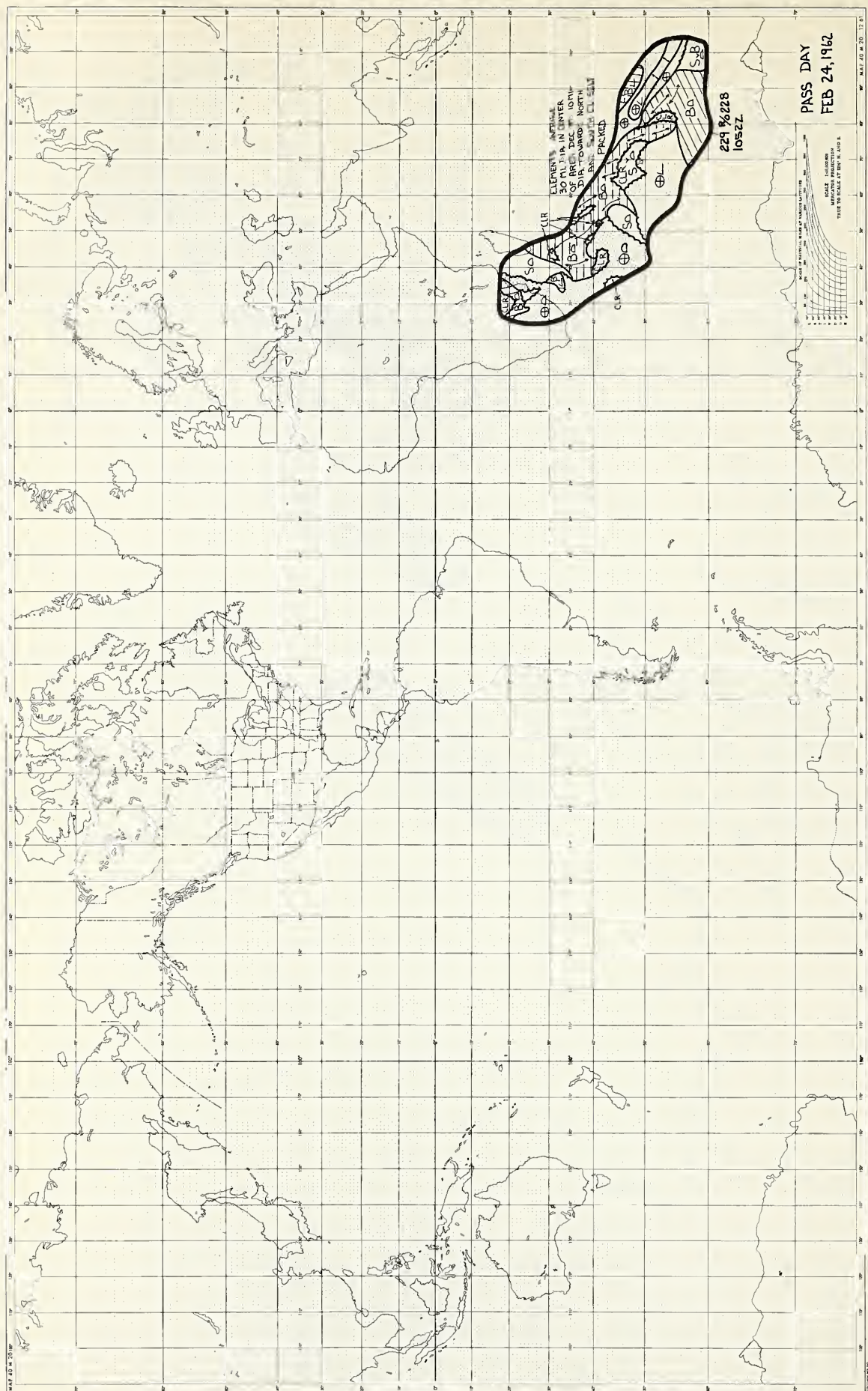
174D
166Z

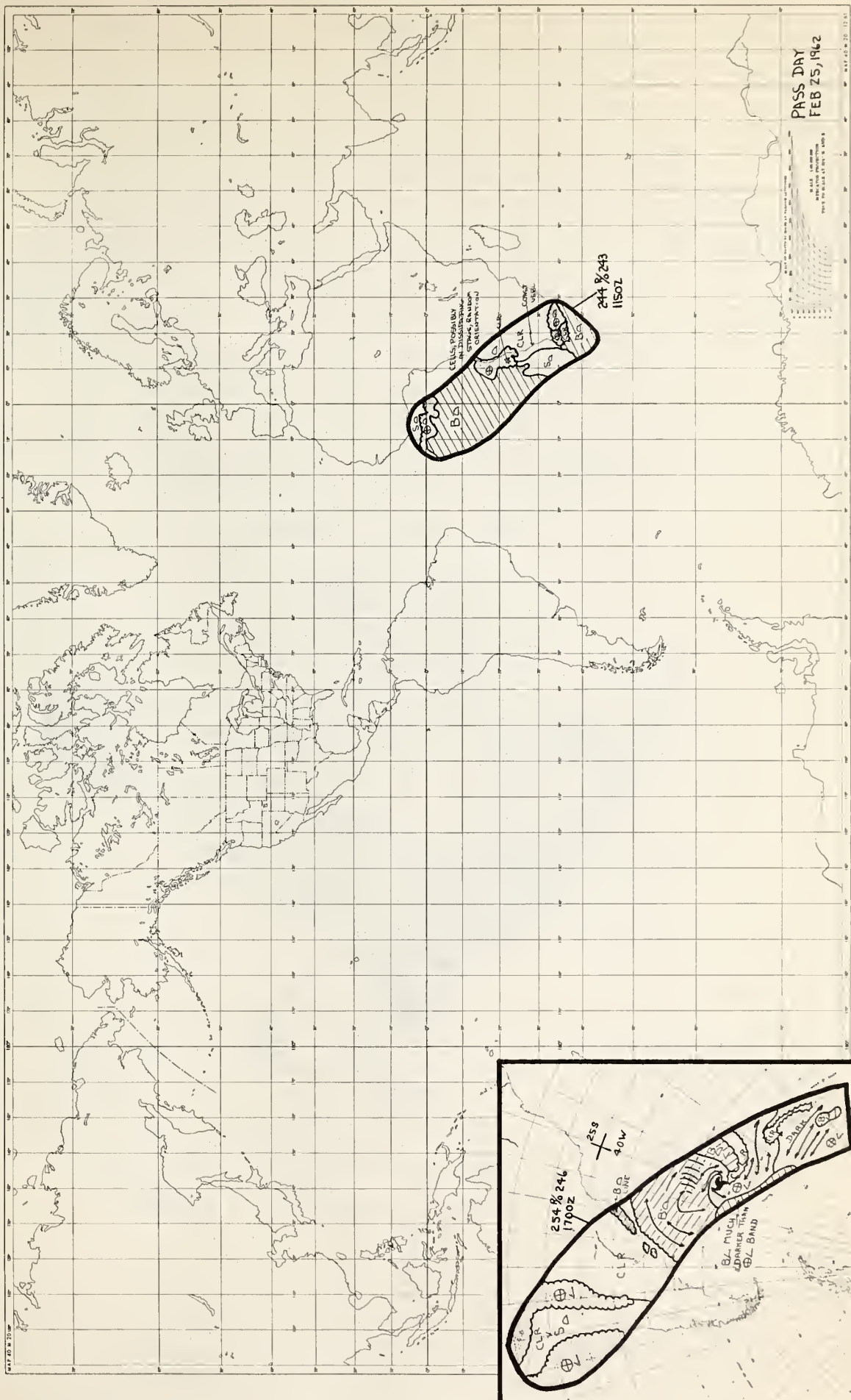
PASS DRY
FEB 20 1942
PART 1 OF 2

MAY 1952 1:27

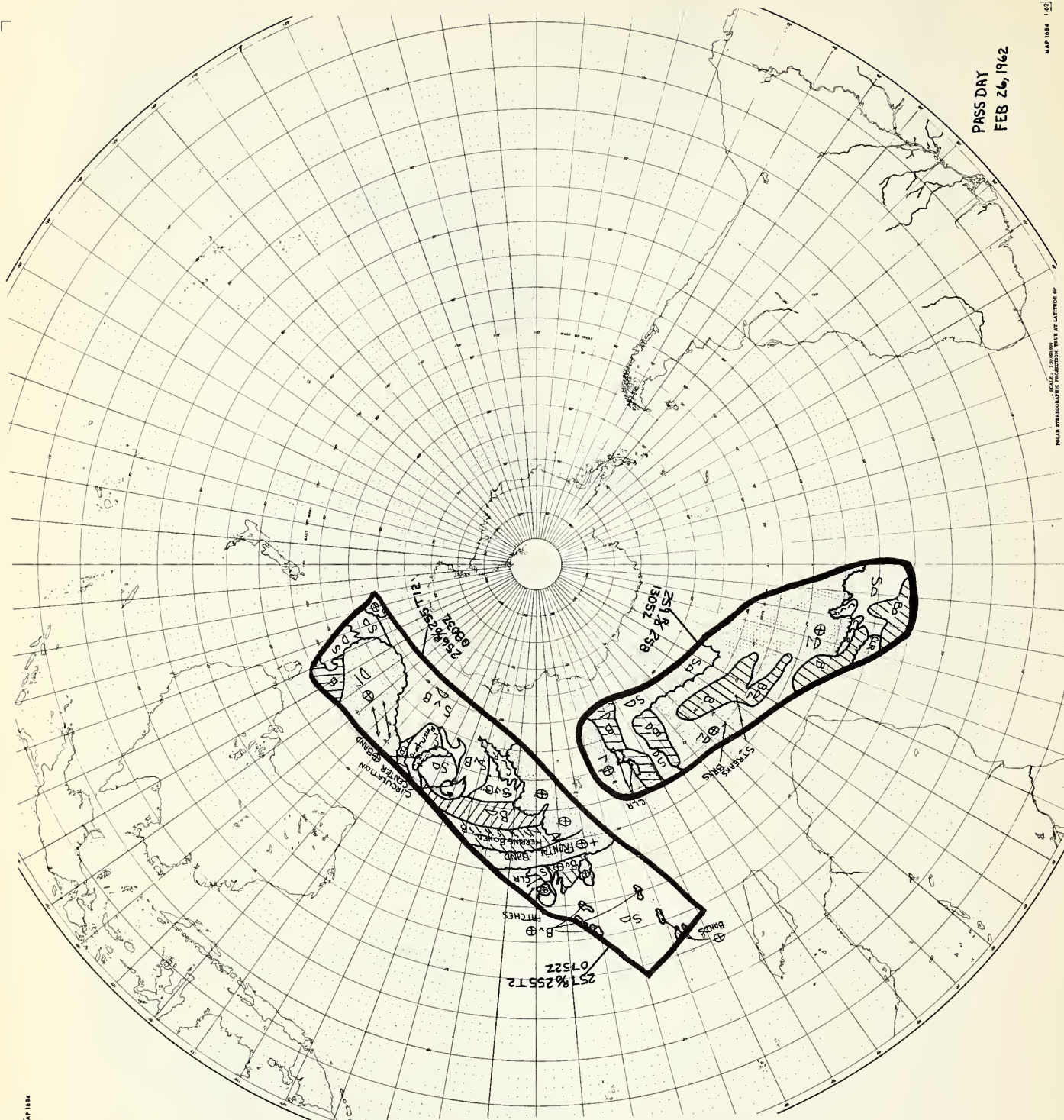


PASS DAY
FEB 20, 1962
PART 2 OF 2





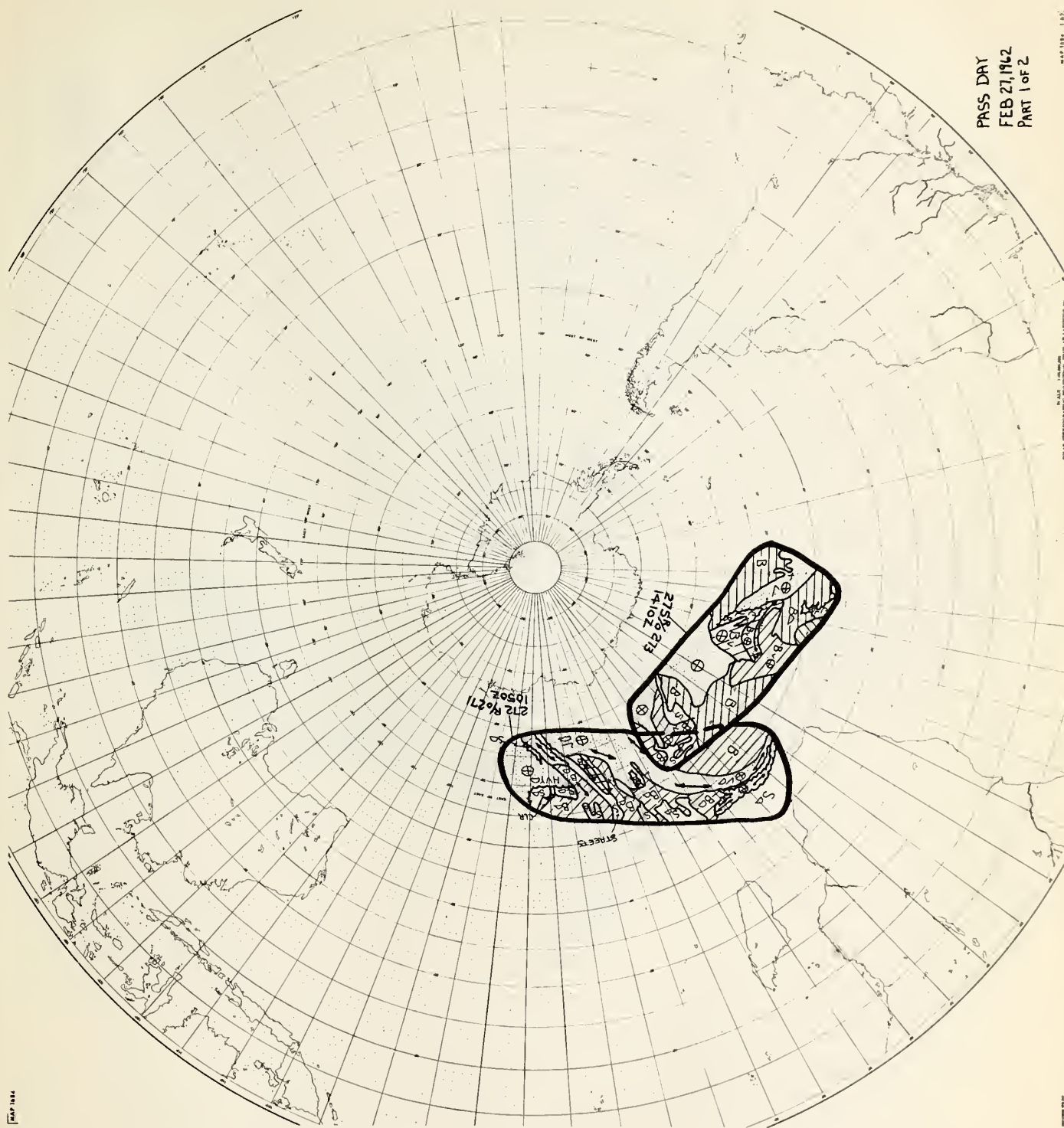
PASS DAY

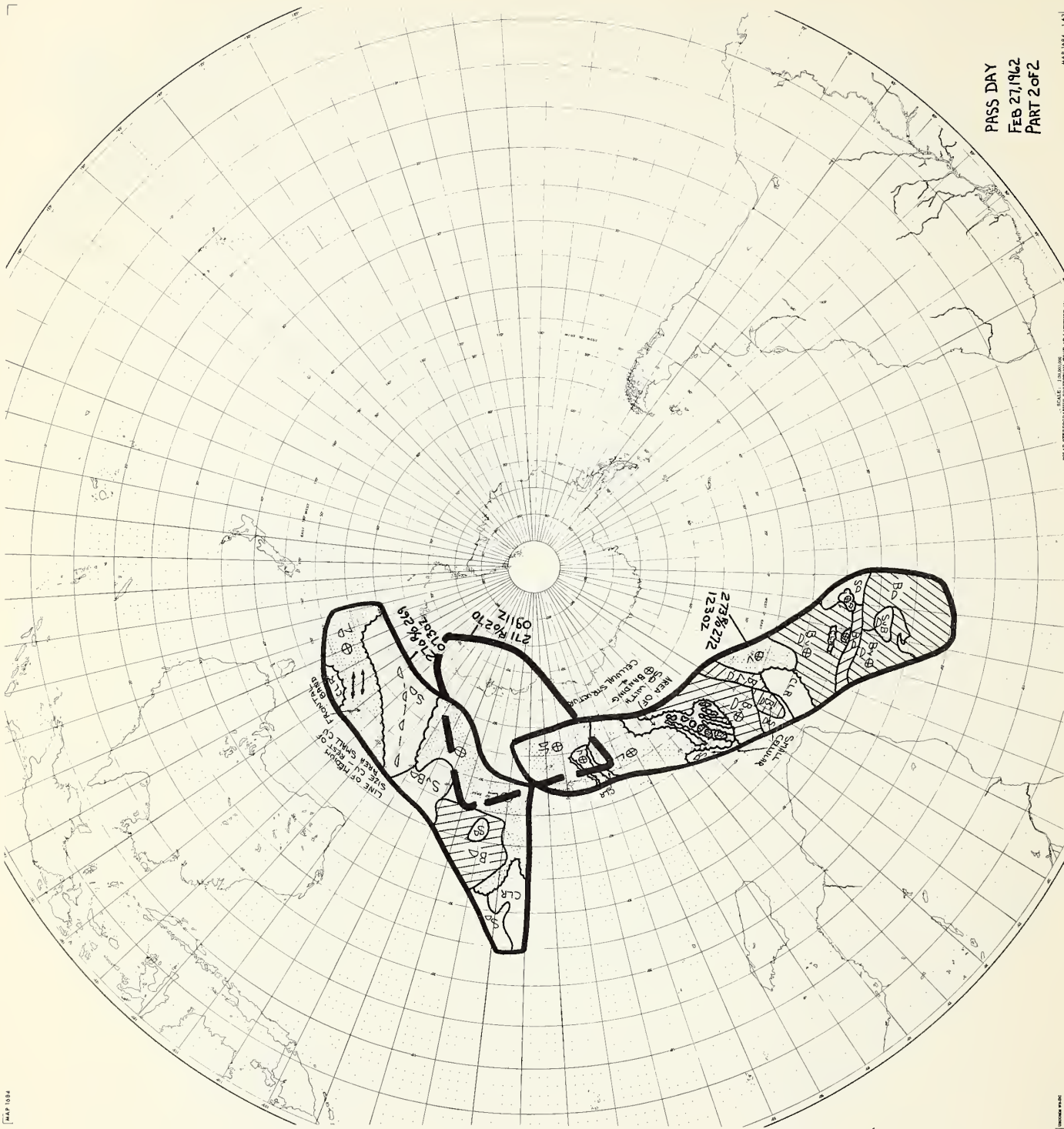


PASS DAY
FEB 27, 1962
PART 1 of 2

MAP 1000 100

SCALE 1:100,000
POLAR STEREOGRAPHIC PROJECTION TRUE 45° LATITUDE





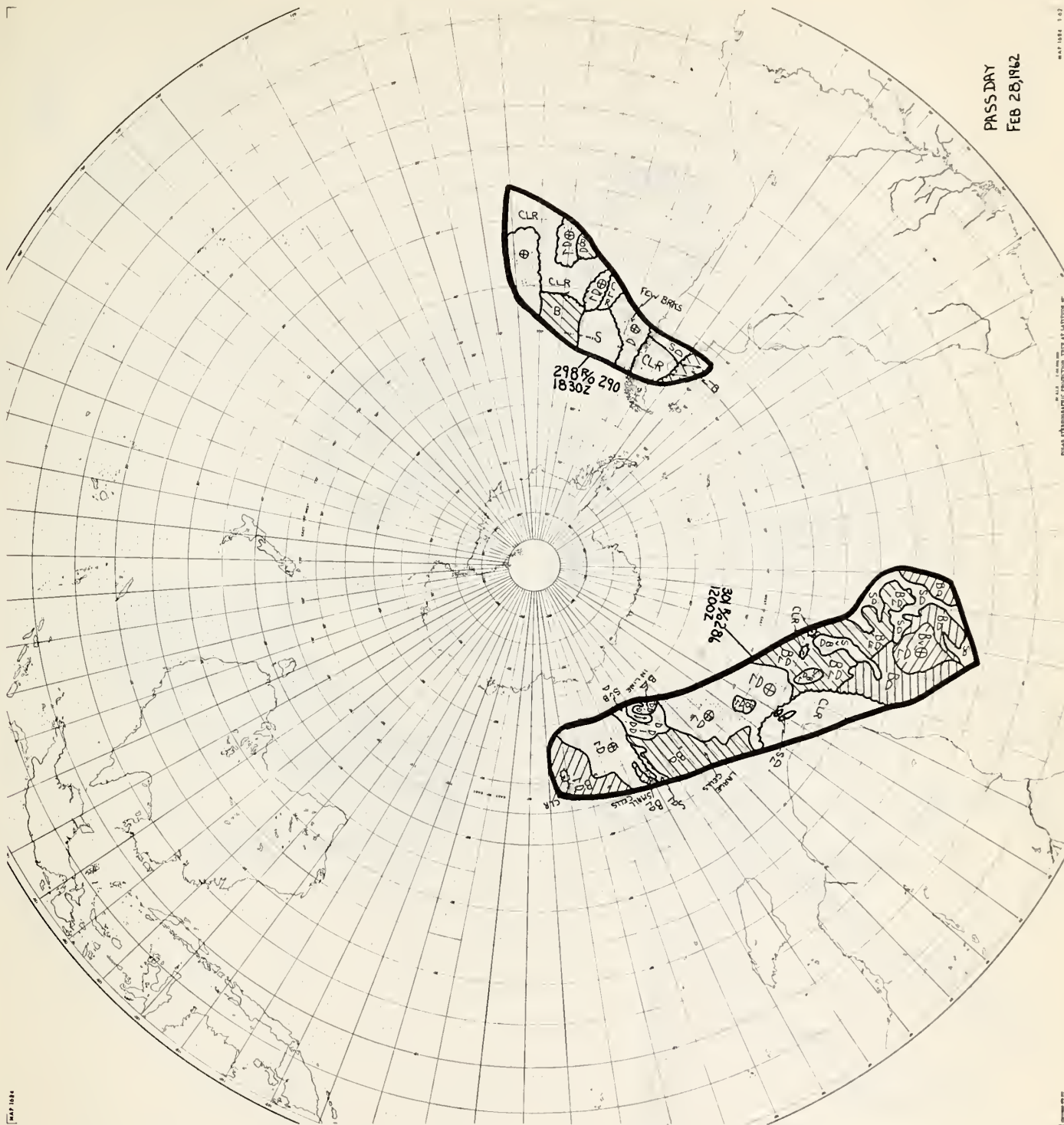
PASS DAY
FEB 27, 1962
PART 2 of 2

MAP 1584 1:25

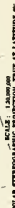
SCALE: 1:250,000
POLAR STEREOGRAPHIC PROJECTION TRUE AT LATITUDE 40°

MAP 1584

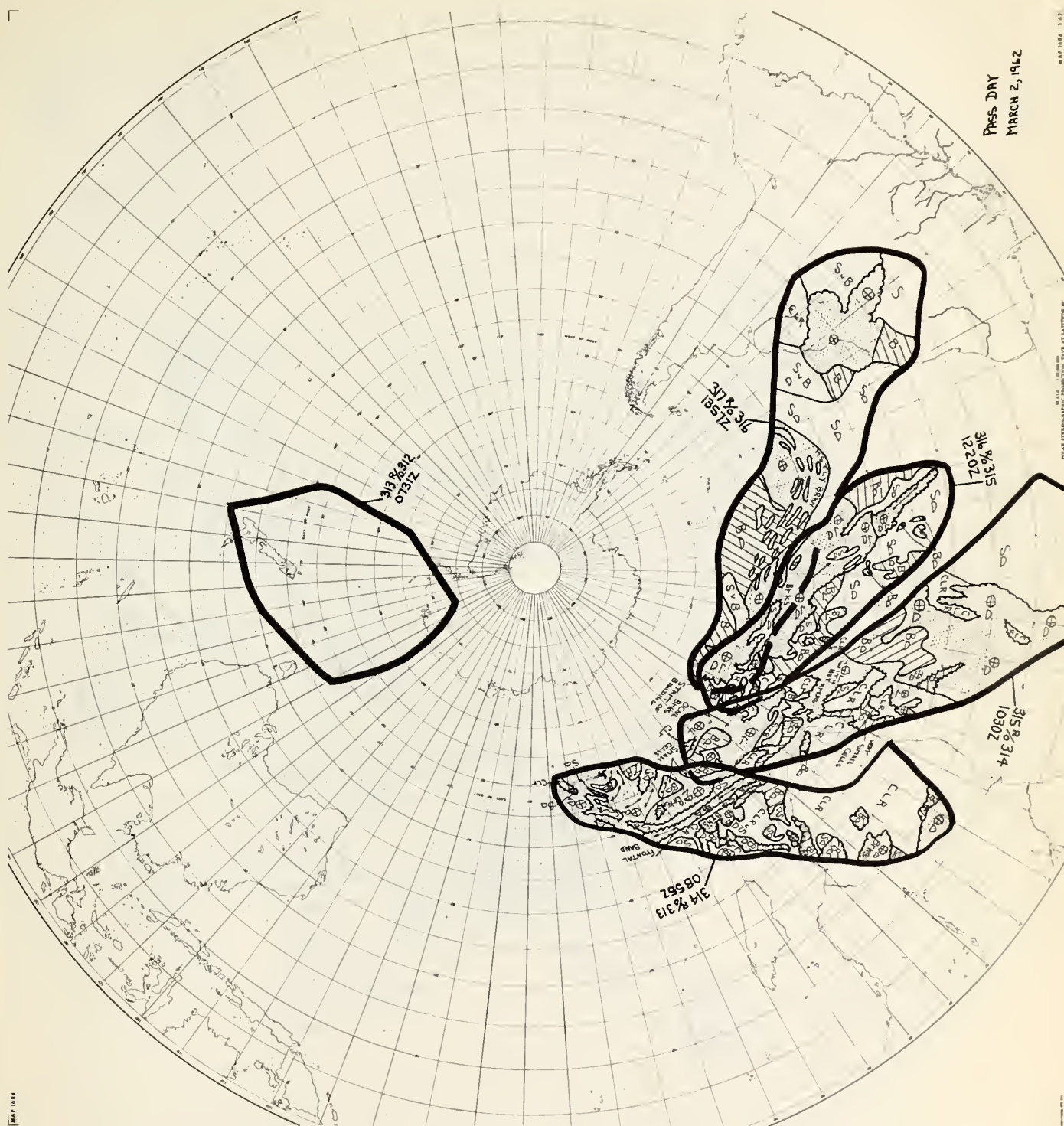
1:250,000

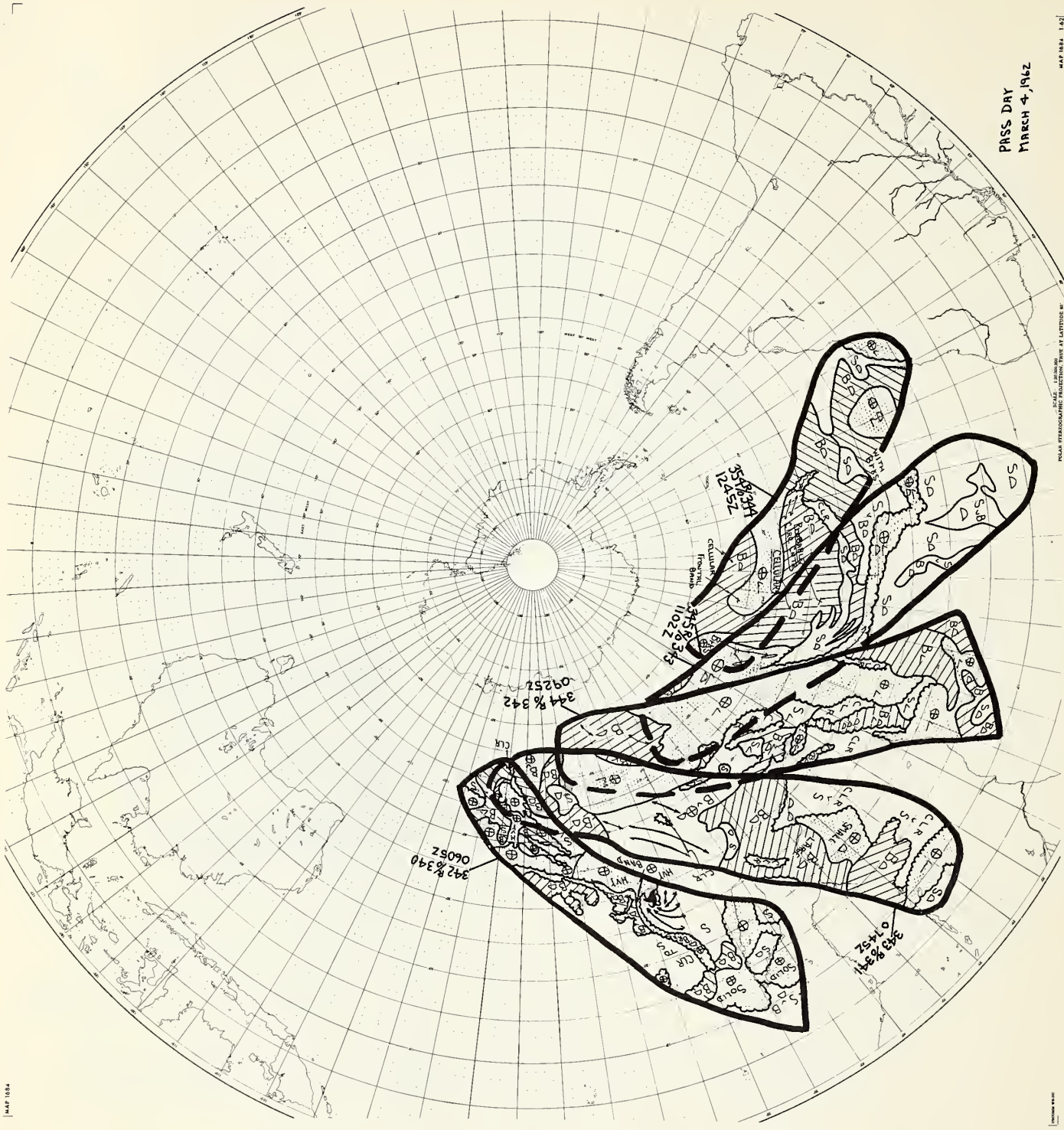


PASS DAY
FEB 28, 1962



DOI: 10.1002/anie.200500000



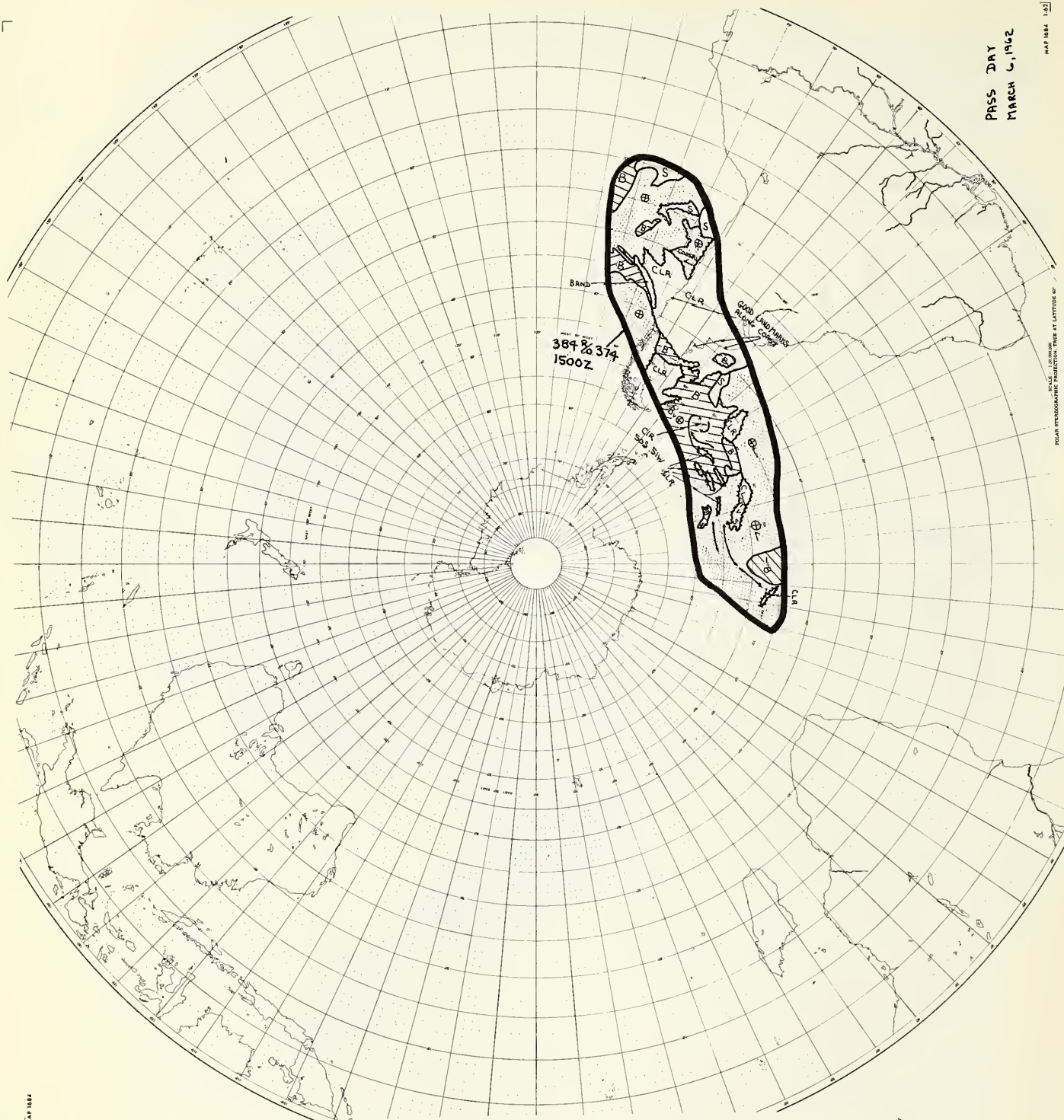


PASS DAY
MARCH 4, 1962

MAP 1684 1.2

POLAR PROJECTION
SCALE: 1:100,000
TERRITORY OF GREENLAND

MAP 1684



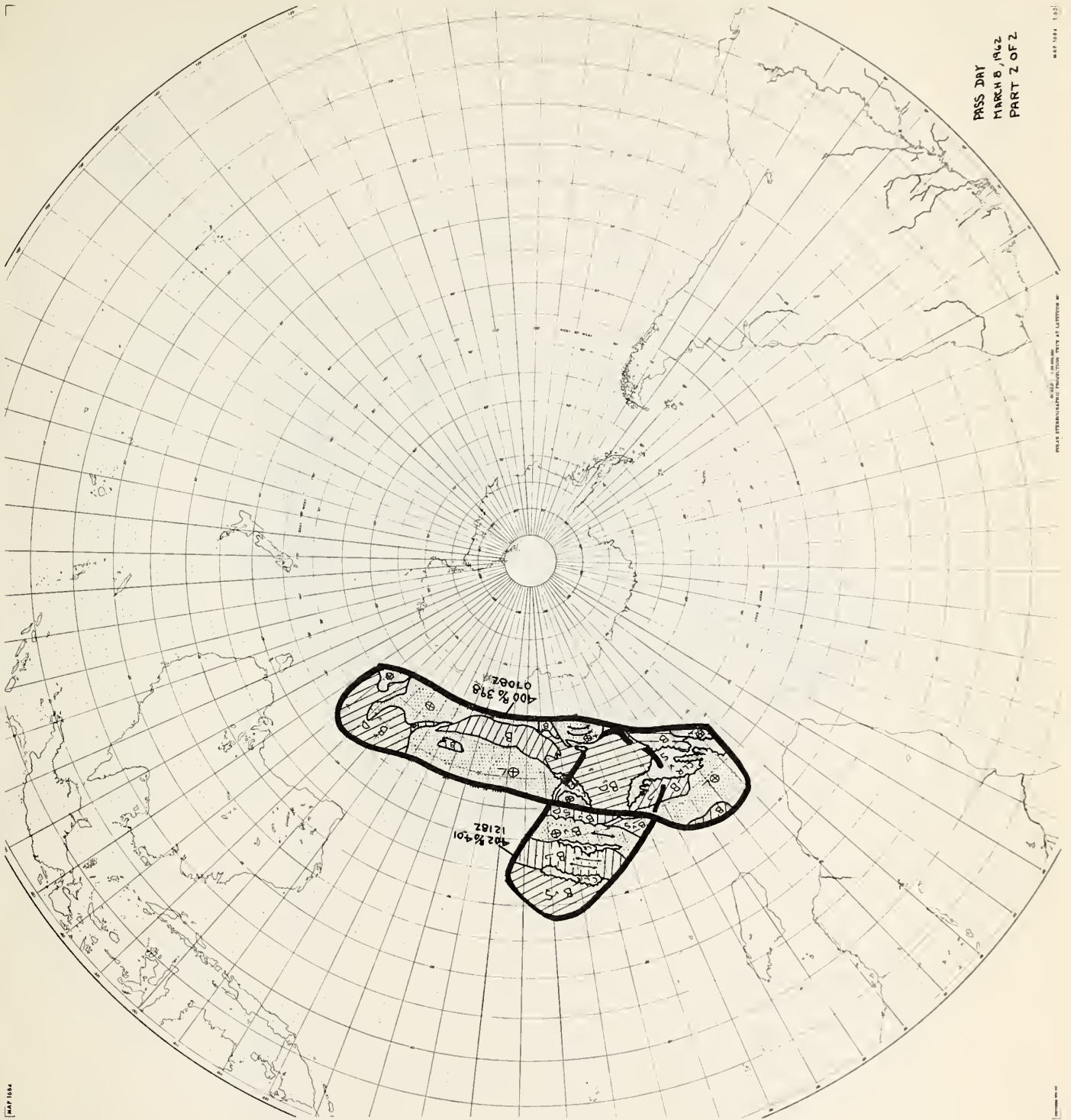
PASS DAY
MARCH 6, 1962

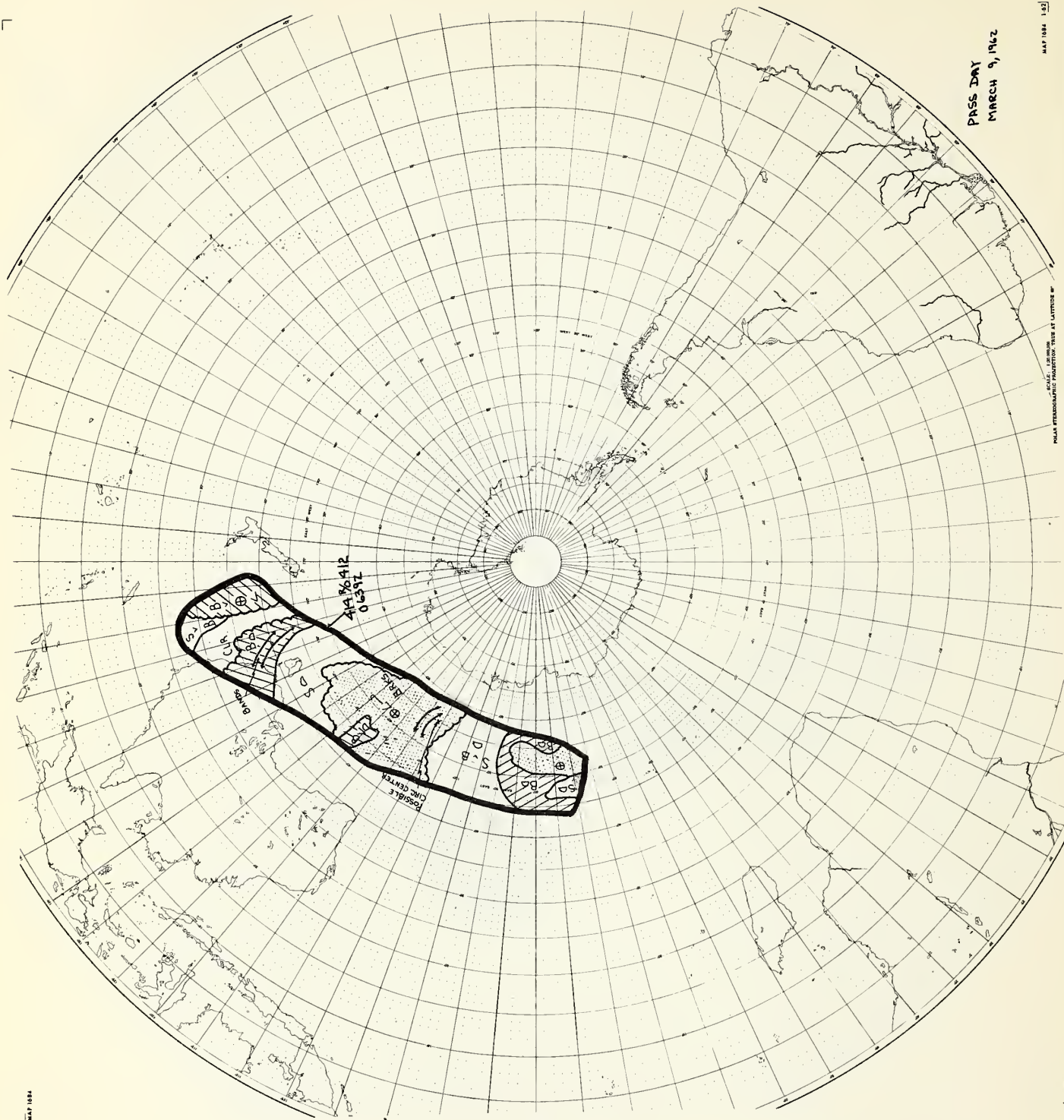
MAP 1884 132

SCALE 1:200,000
POLAR STEREOGRAPHIC PROJECTION, TRUE AT LATITUDE 40°



PASS DAY
MARCH 8, 1962
PART 2 OF 2



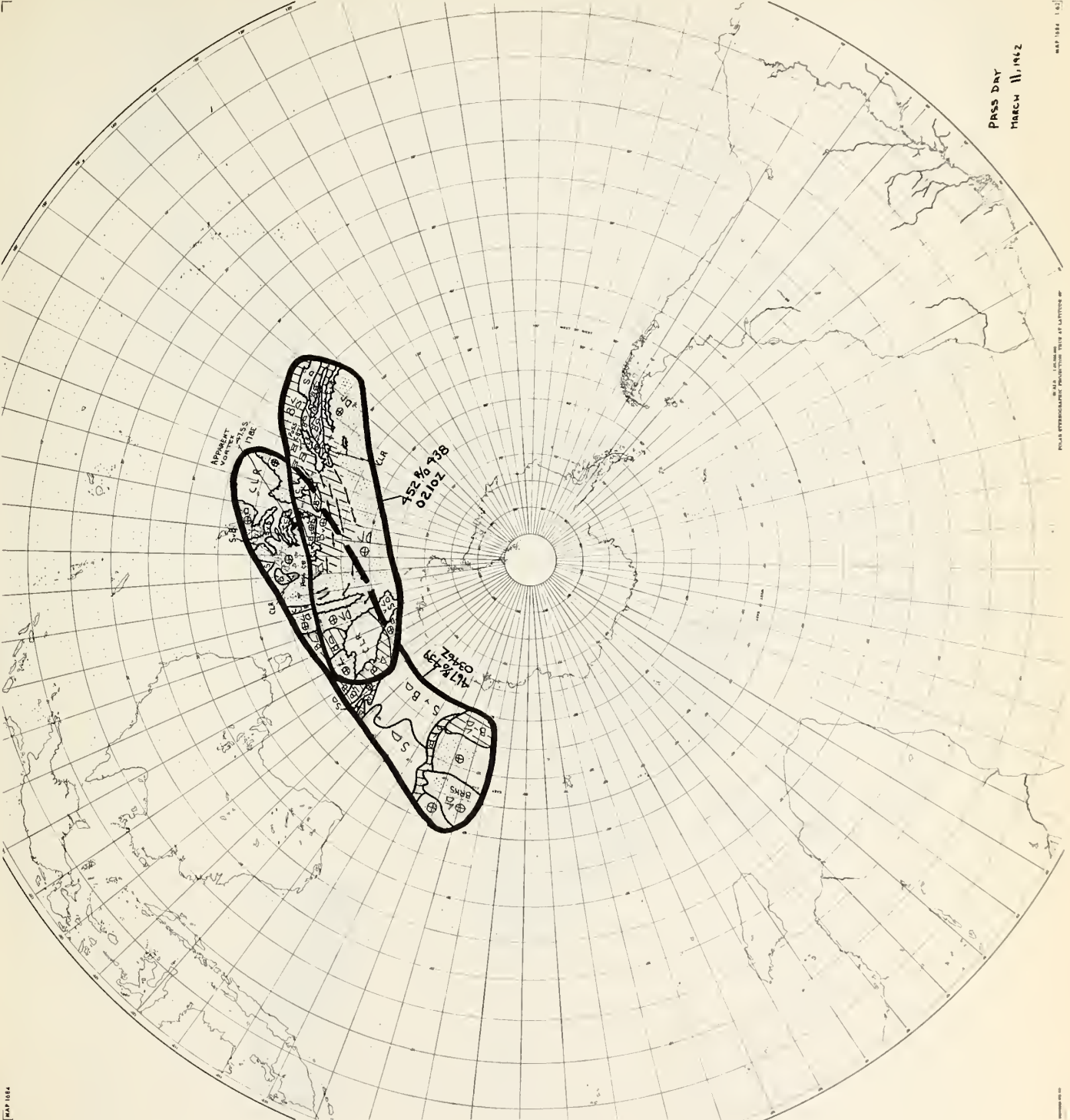


PASS DAY
MARCH 9, 1962

SCALE: 1:100,000
POLAR PROJECTION, TRANSVERSE, TRUE AT LATITUDE 40°

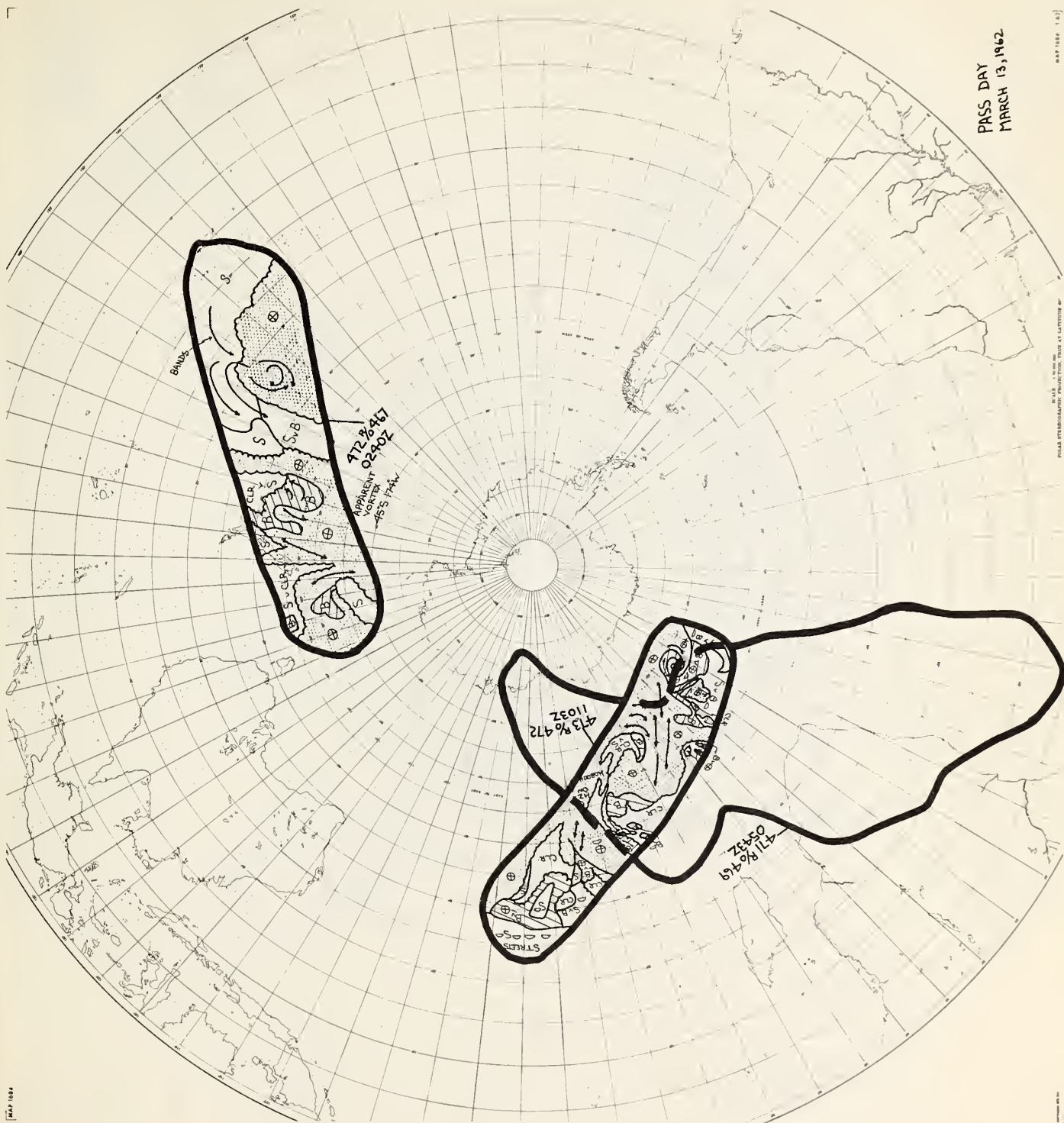
MAP 1084 1/2

PASS DRY
MARCH 11, 1962



MAP 1004





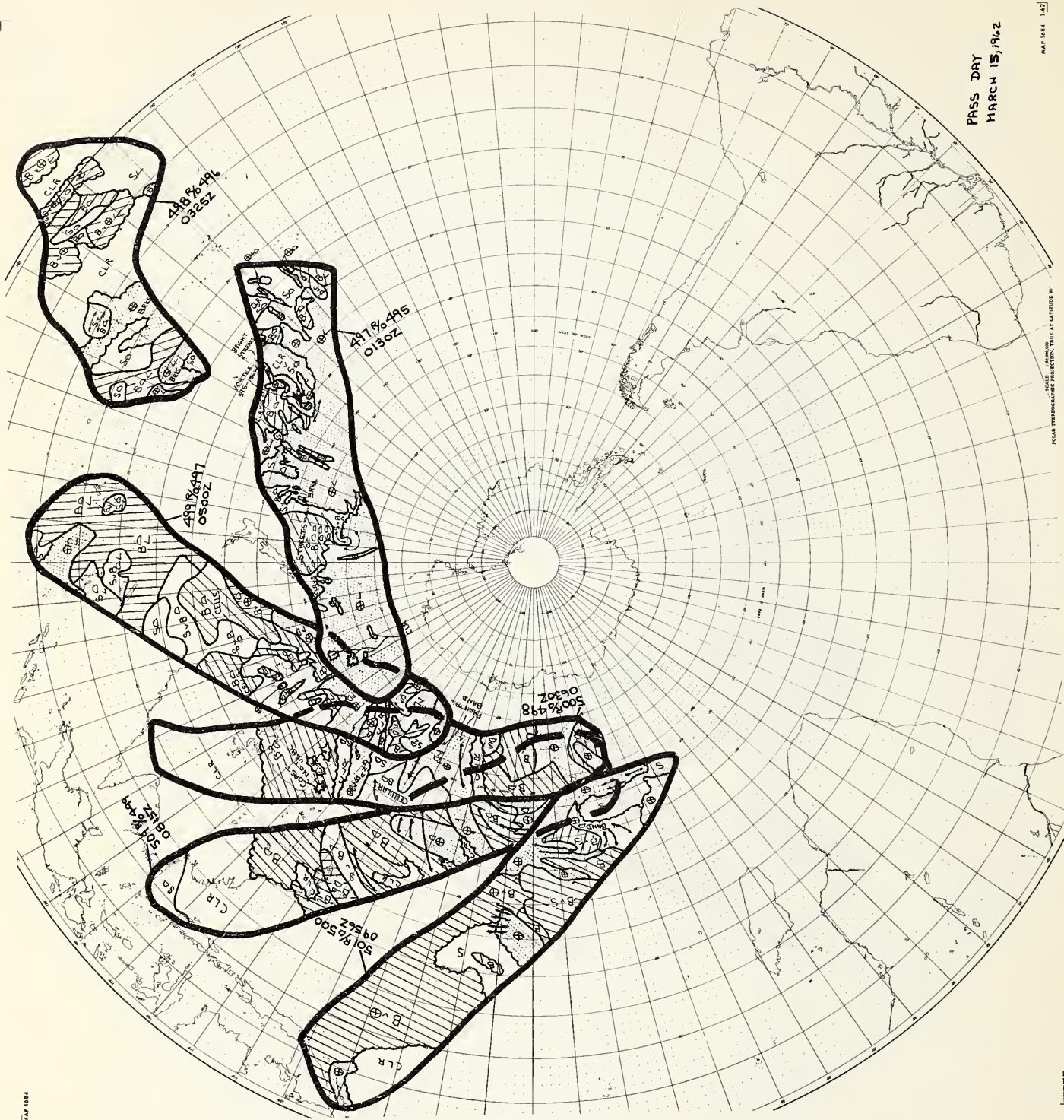
PASS DAY
MARCH 13, 1962

MAY 1962 (16)

POLEAR STEREOGRAPHIC PROJECTION TRUE AT LATTITUDE 40°

SCALE: 1:50,000,000

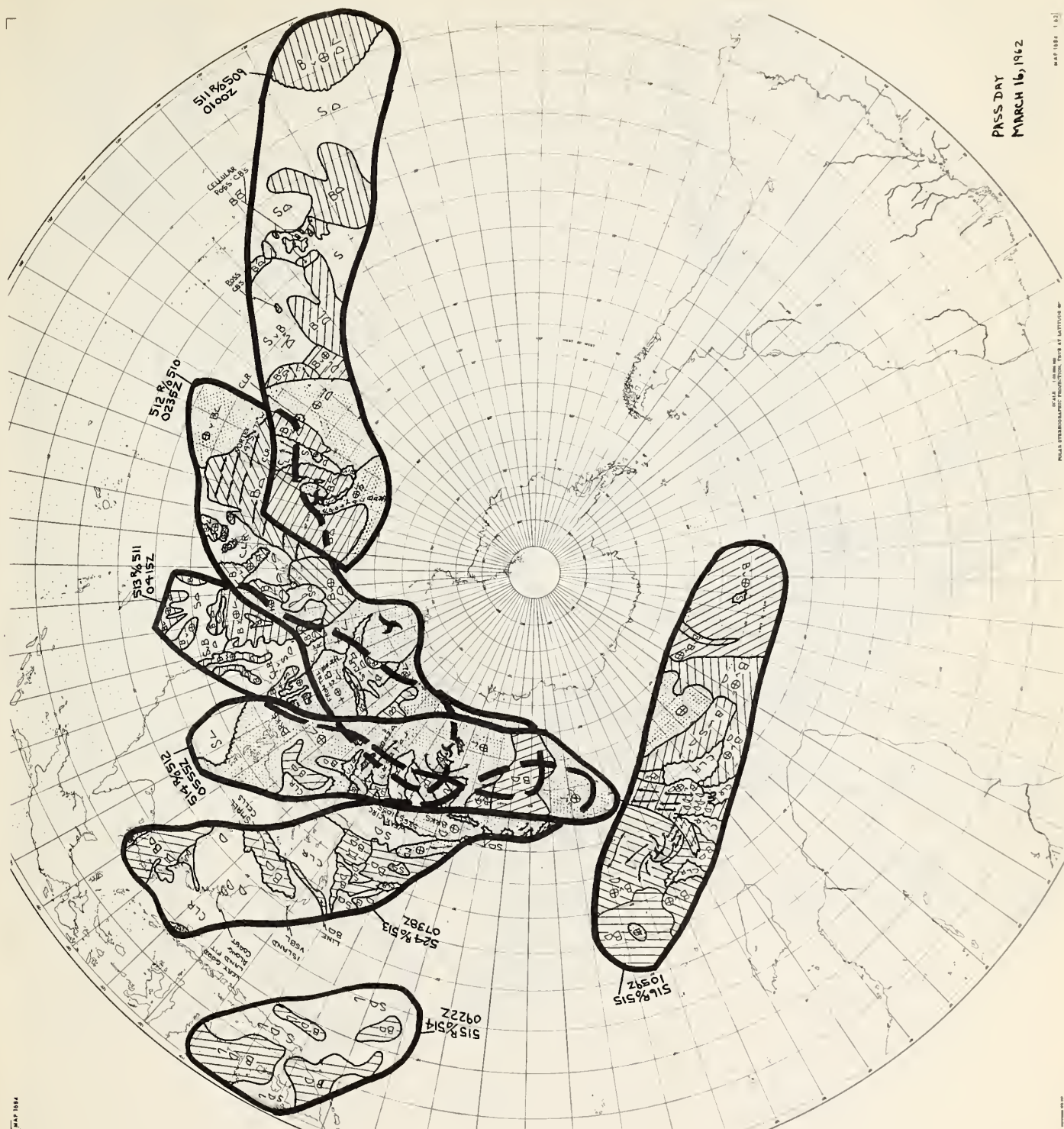




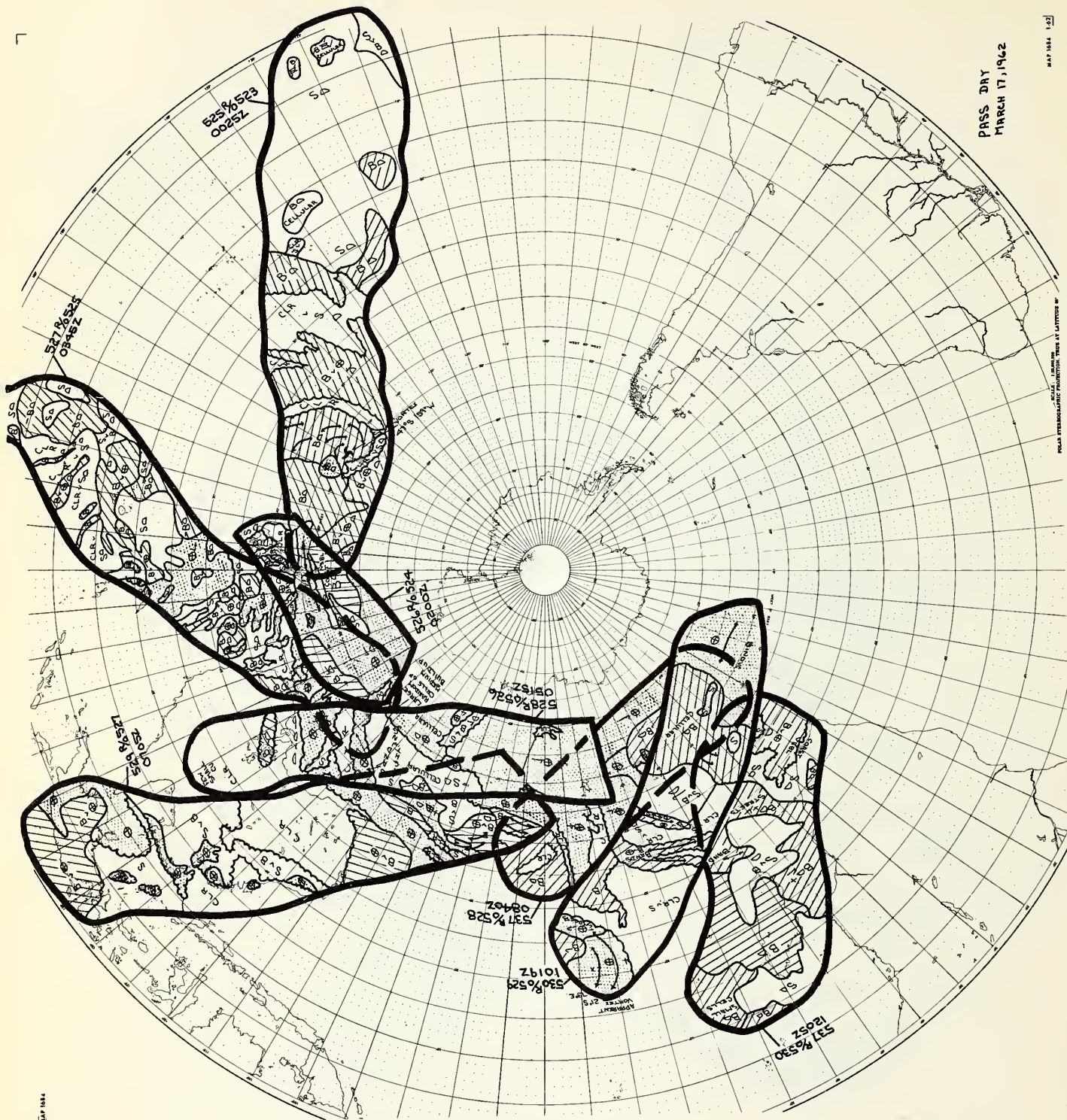
PASS DRY
MARCH 15, 1962

MAP 1084 1-57

SCALE: 1:100,000
POLAR STEREOGRAPHIC PROJECTION, UTM AT LATITUDE 40°



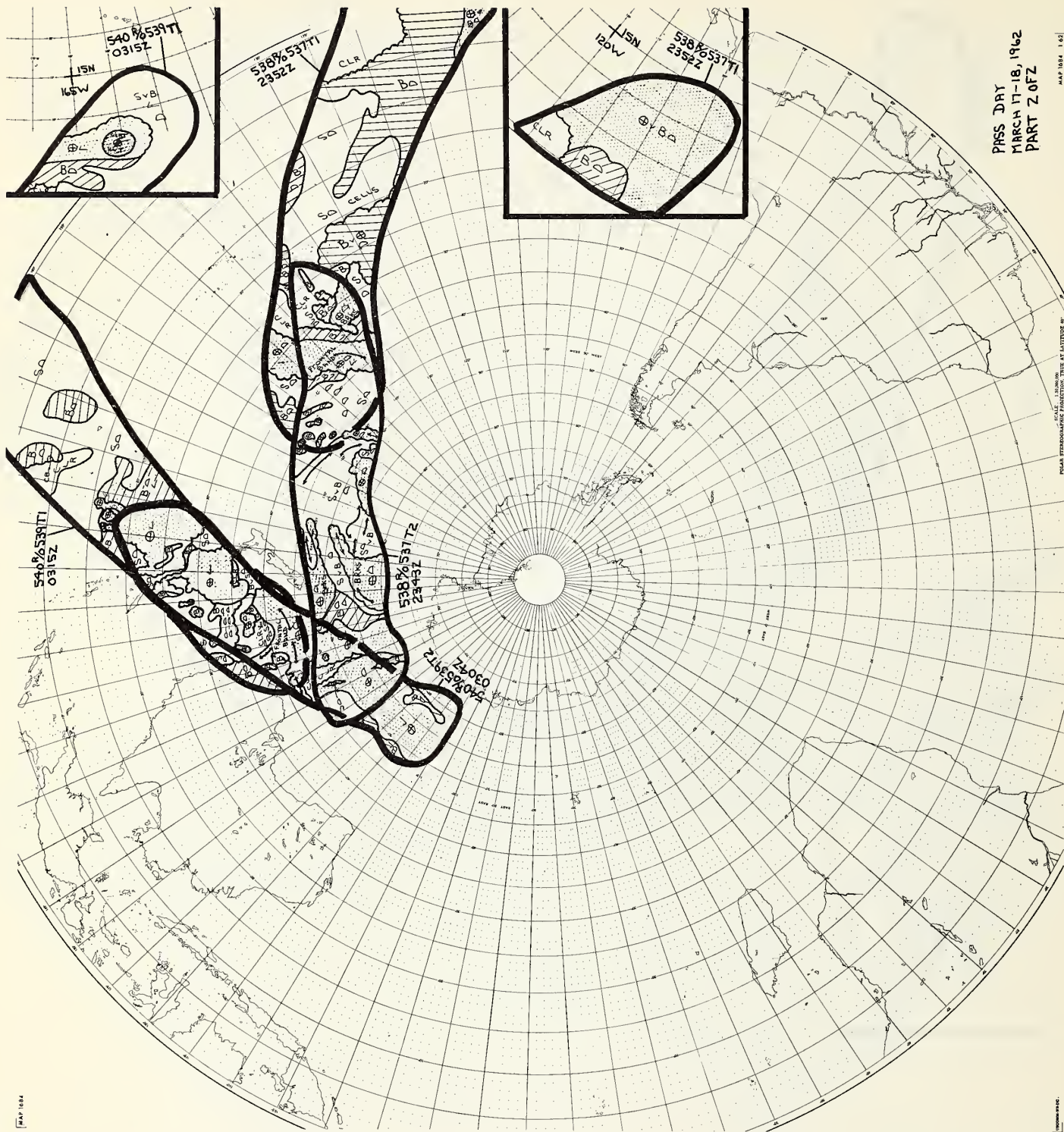
PRSS DAY
MARCH 16, 1962



PASS DRY
MARCH 17, 1962

MAY 1964

LOCAL METEOROLOGICAL OBSERVATIONS
PLotted AT LATITUDE 80°



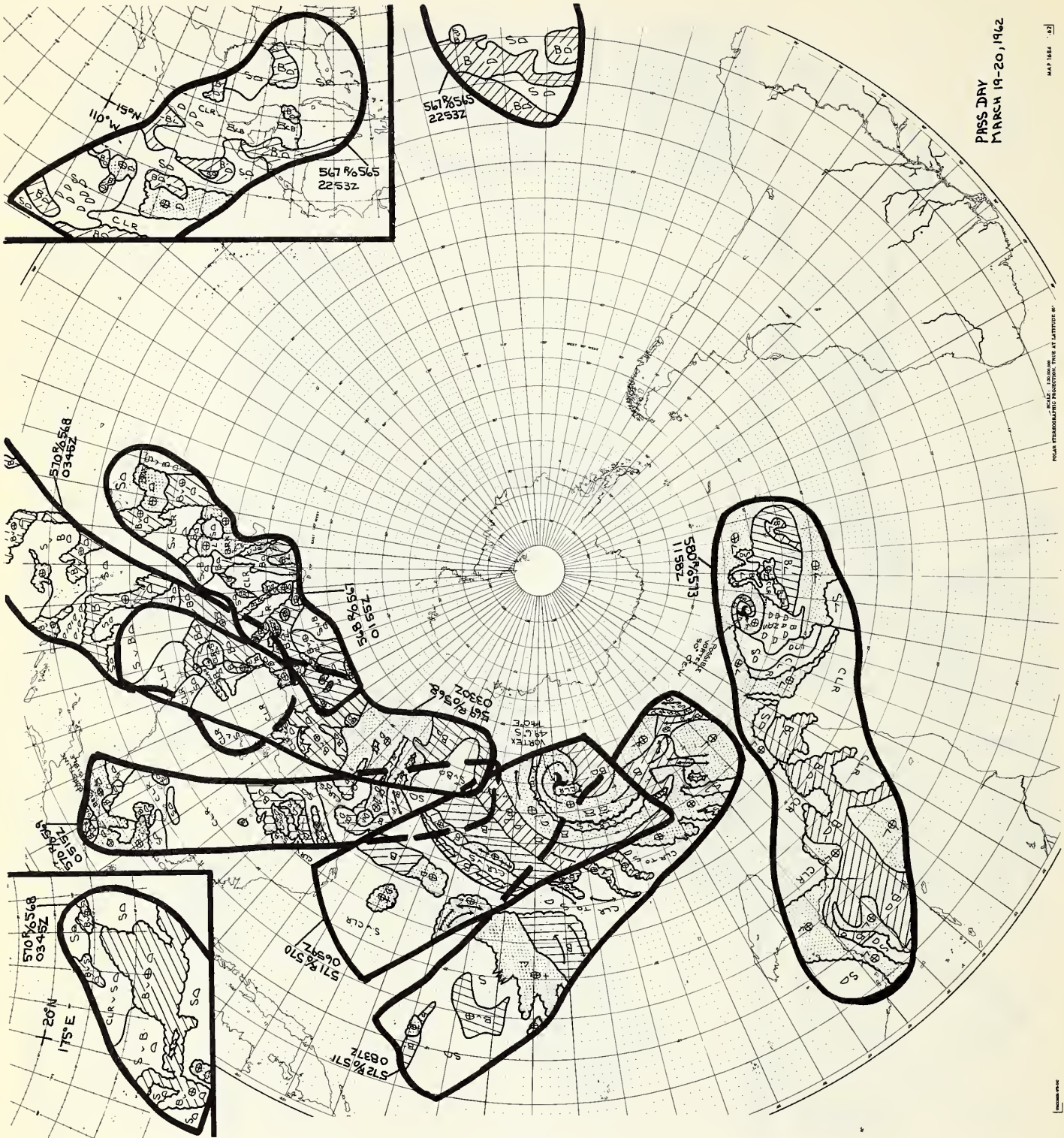
PASS DRY
MARCH 17-18, 1962
PART 2 OF 2

MAP 1084 1:50

SCALE: 1:500,000
POLAR PROJECTION
TRUE OF LATITUDE 40°



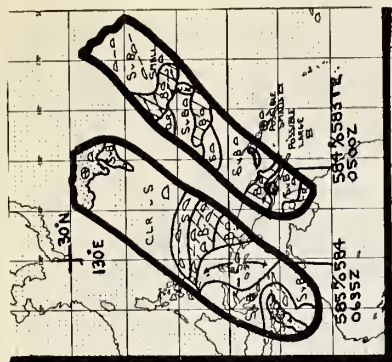
PASS DAY
MARCH 19, 1962



PASS DAY
MARCH 19-20, 1962

MAP 1864 1-62

POLAR STEREOGRAPHIC PROJECTION TRUE AT LATITUDE 60°



PASS DRY
MARCH 21, 1962

MAP 1884 (18)

POLAR STEREOGRAPHIC PROJECTION, TRUE AT LATTITUDE 40°

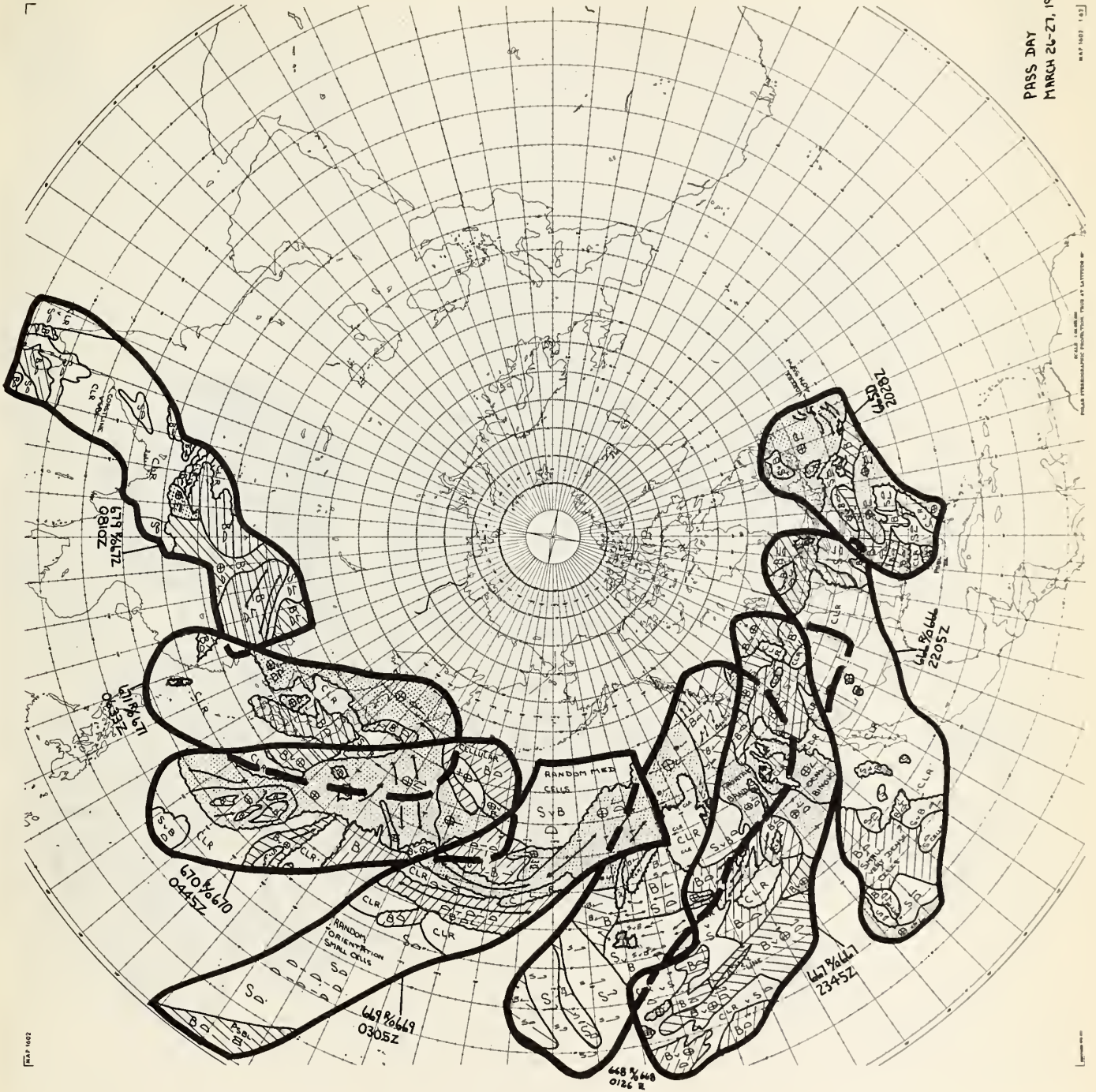


PASS DAY
MARCH 22-23, 1962



PASS DAY
MARCH 26-27, 1962

NAV 11052 1-62

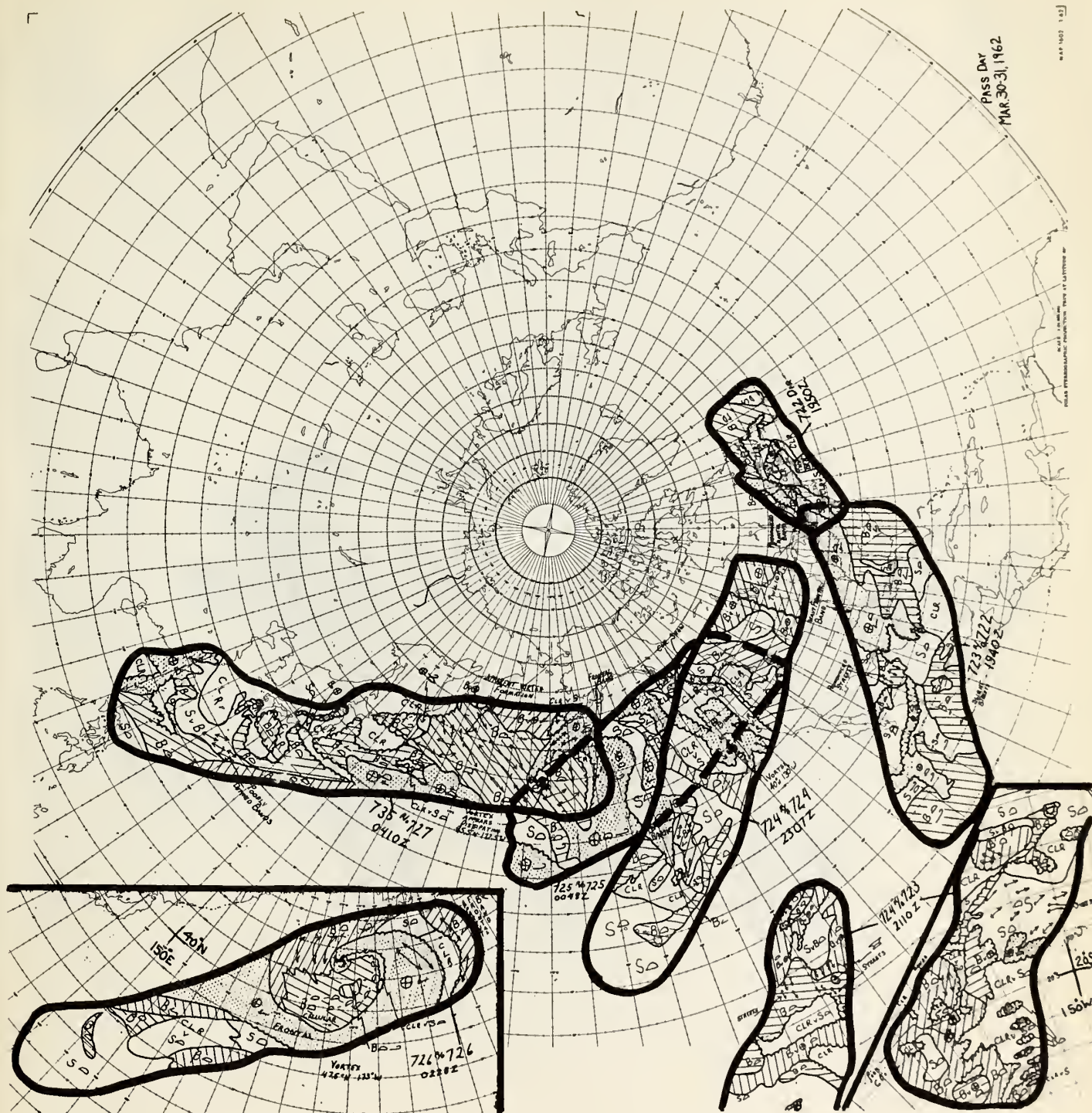


NAV 11052





10815707
2011/2



PASS DAY
MAR 30-31 1962

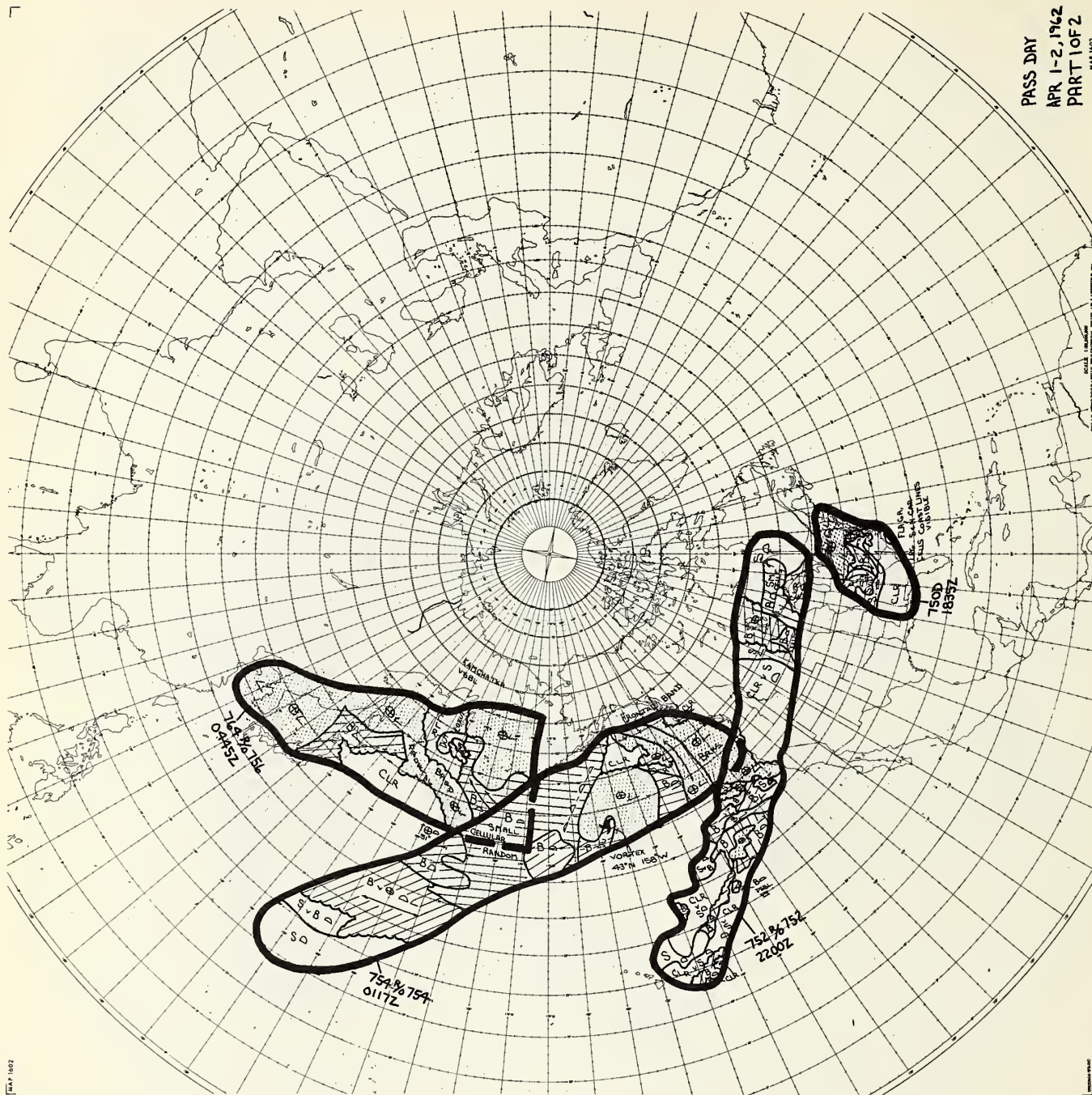
see next vol



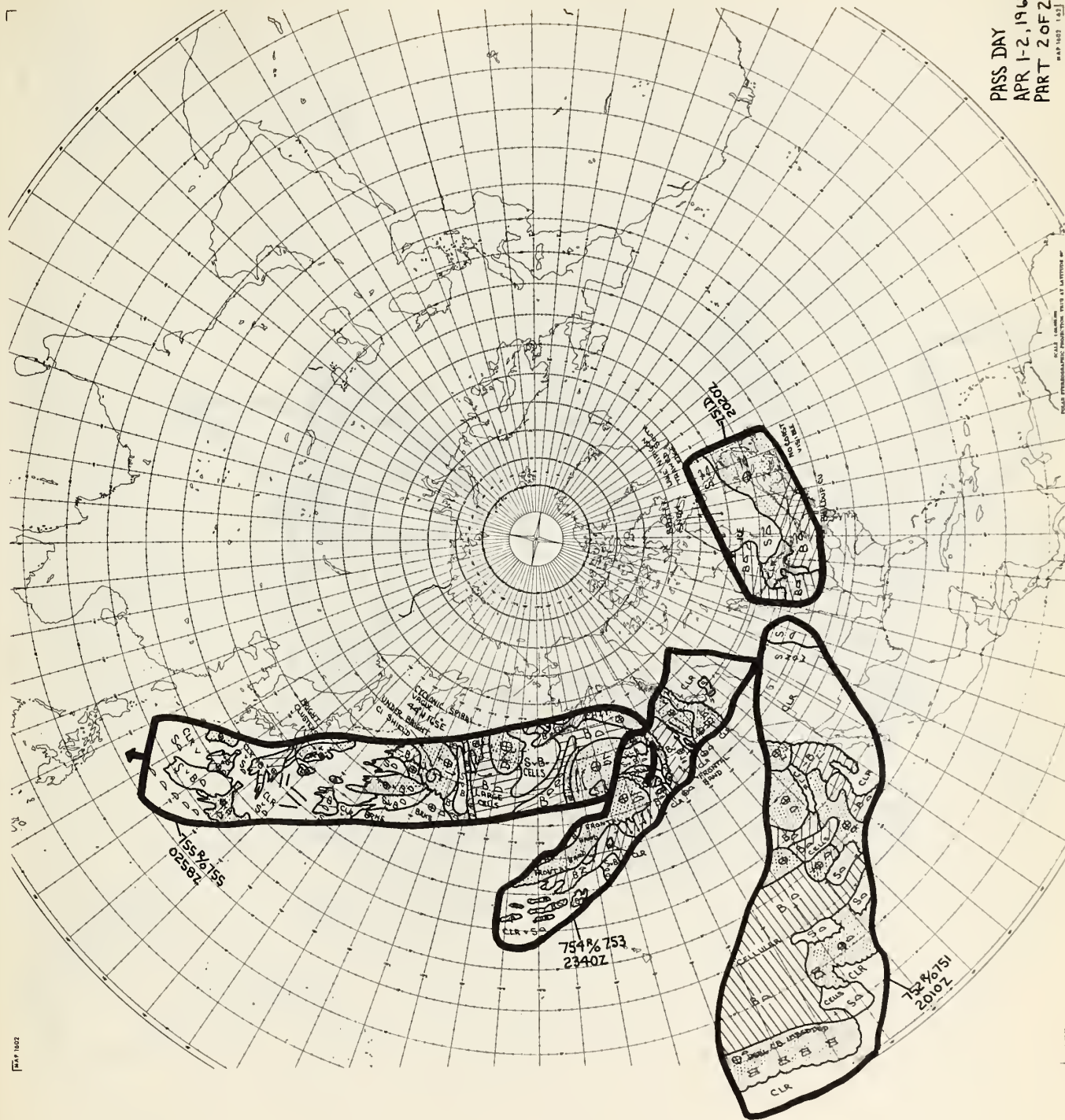
PASS DAY
MAR 31 APR 1, 1962
PART 2 OF 2

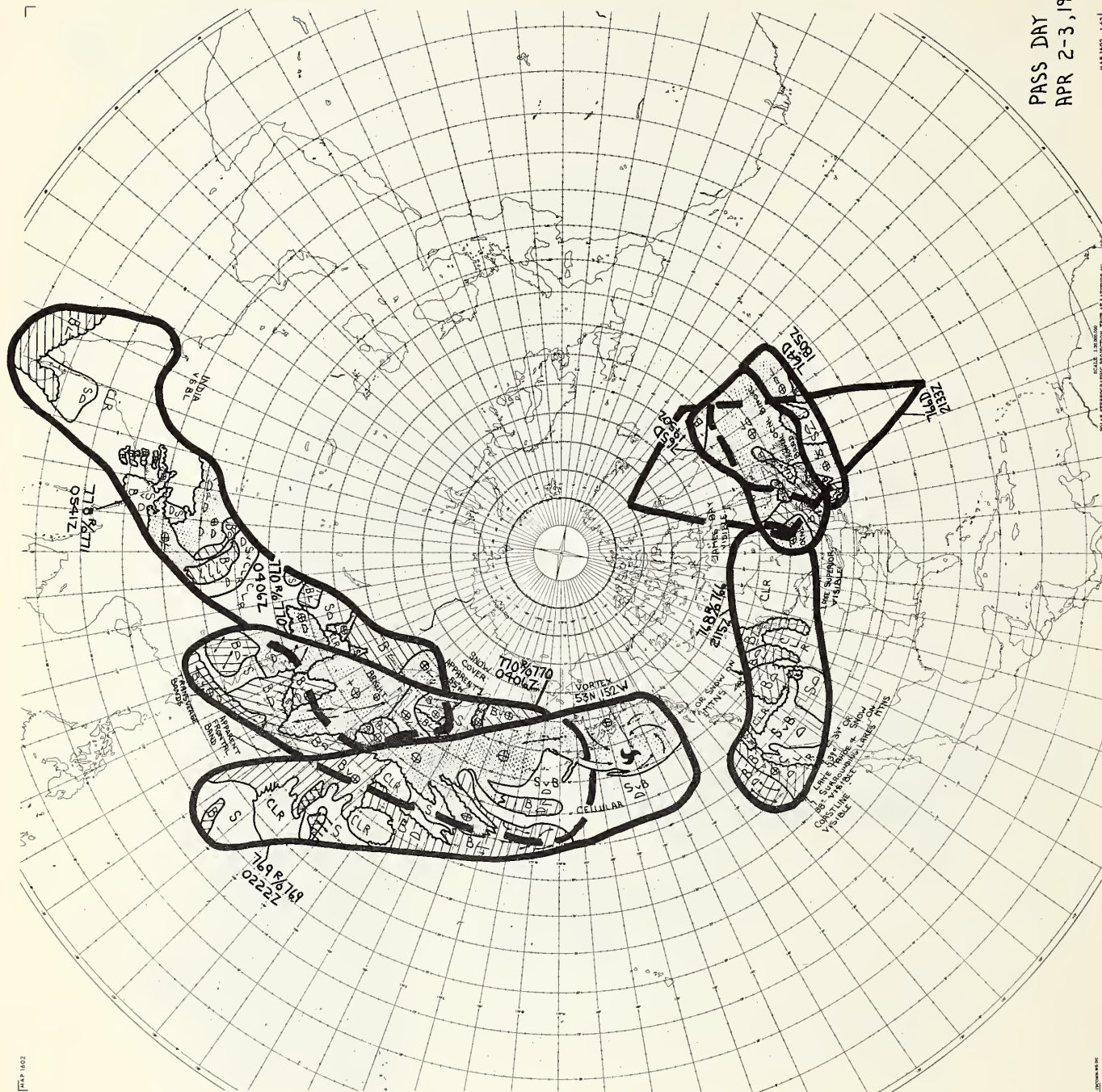
MAP 1403 1:50



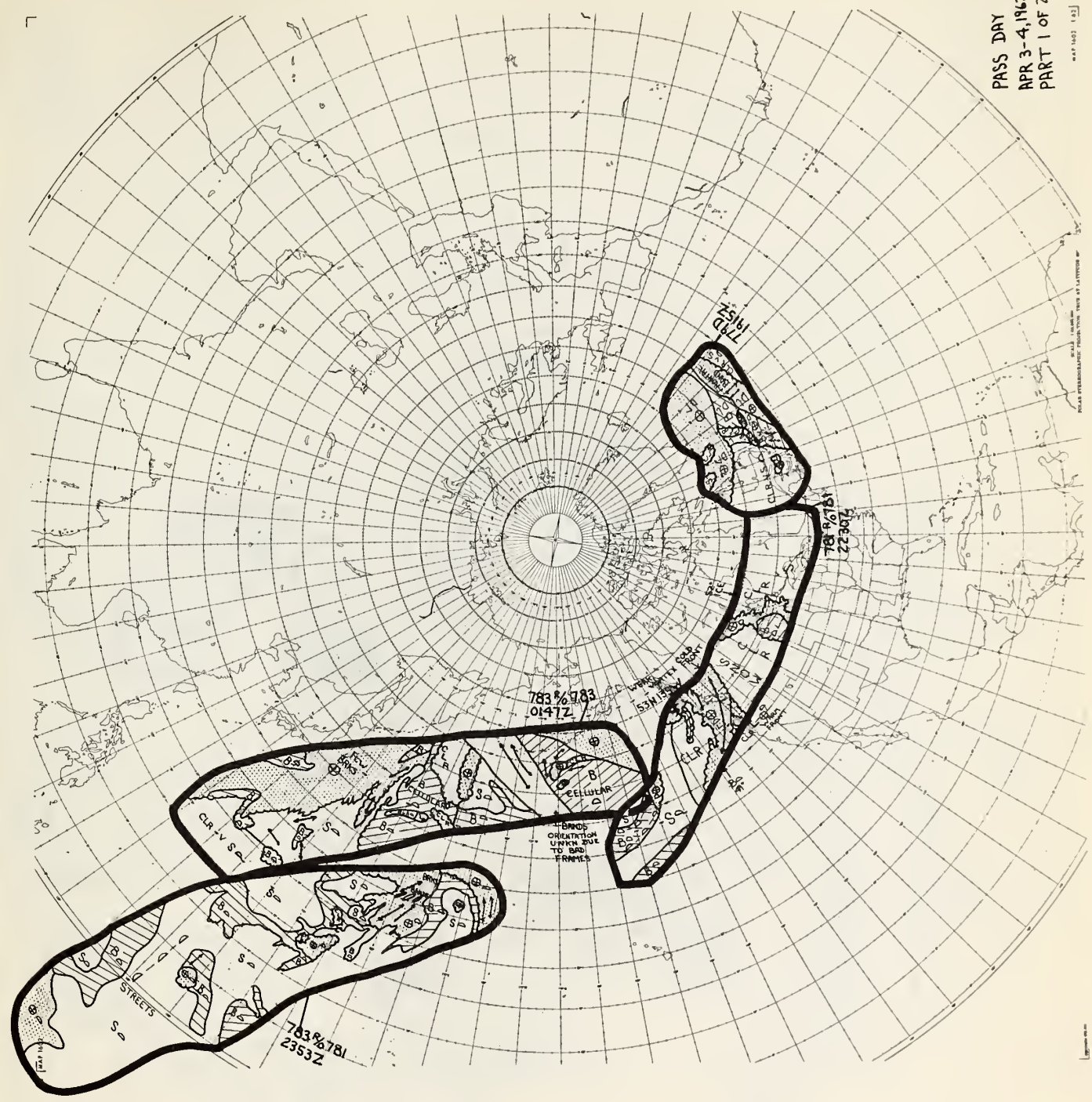


PASS DAY
APR 1-2, 1962
PART 2 OF 2





PASS DAY
APR 3-4, 1962
PART 1 OF 2



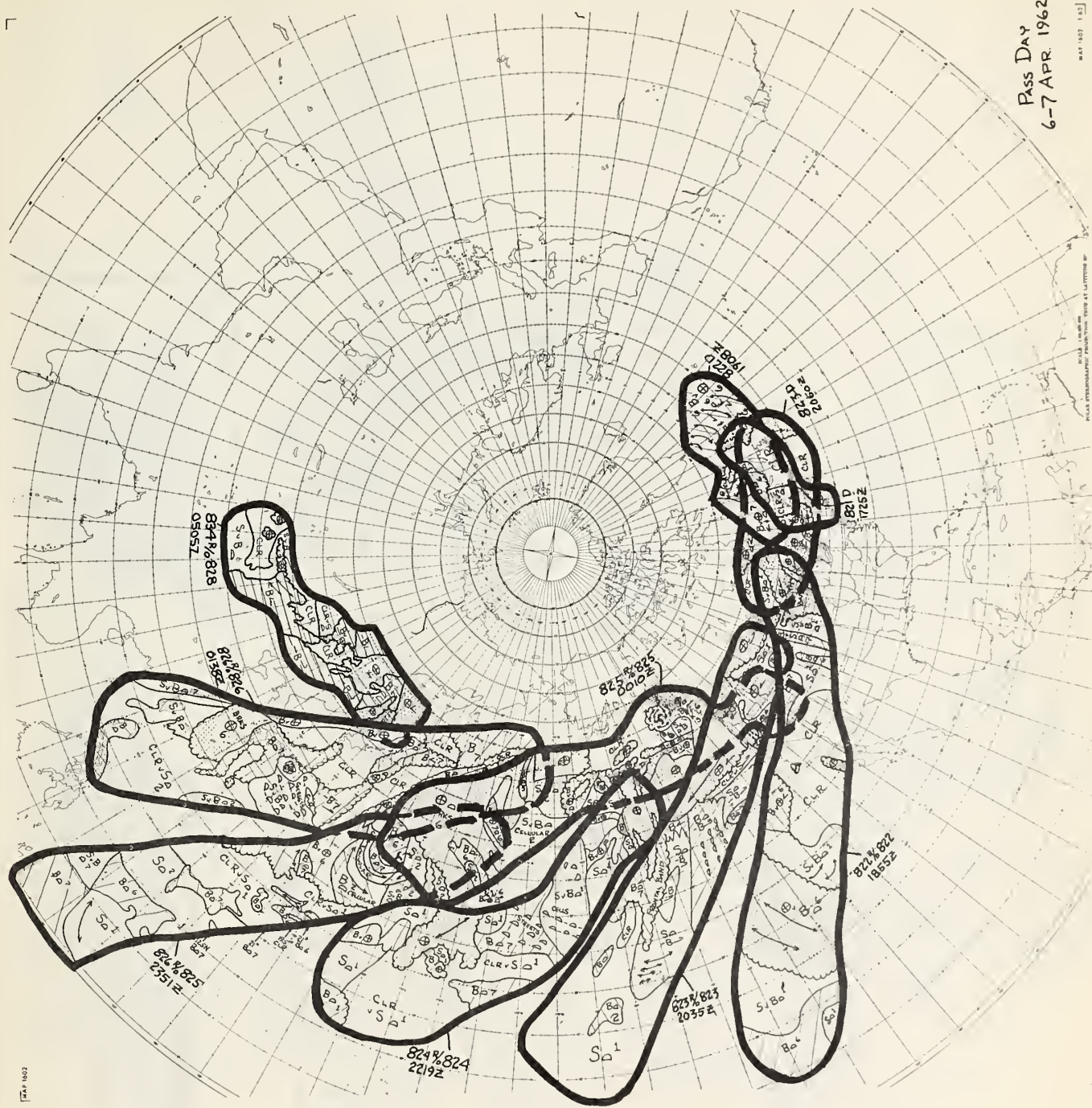


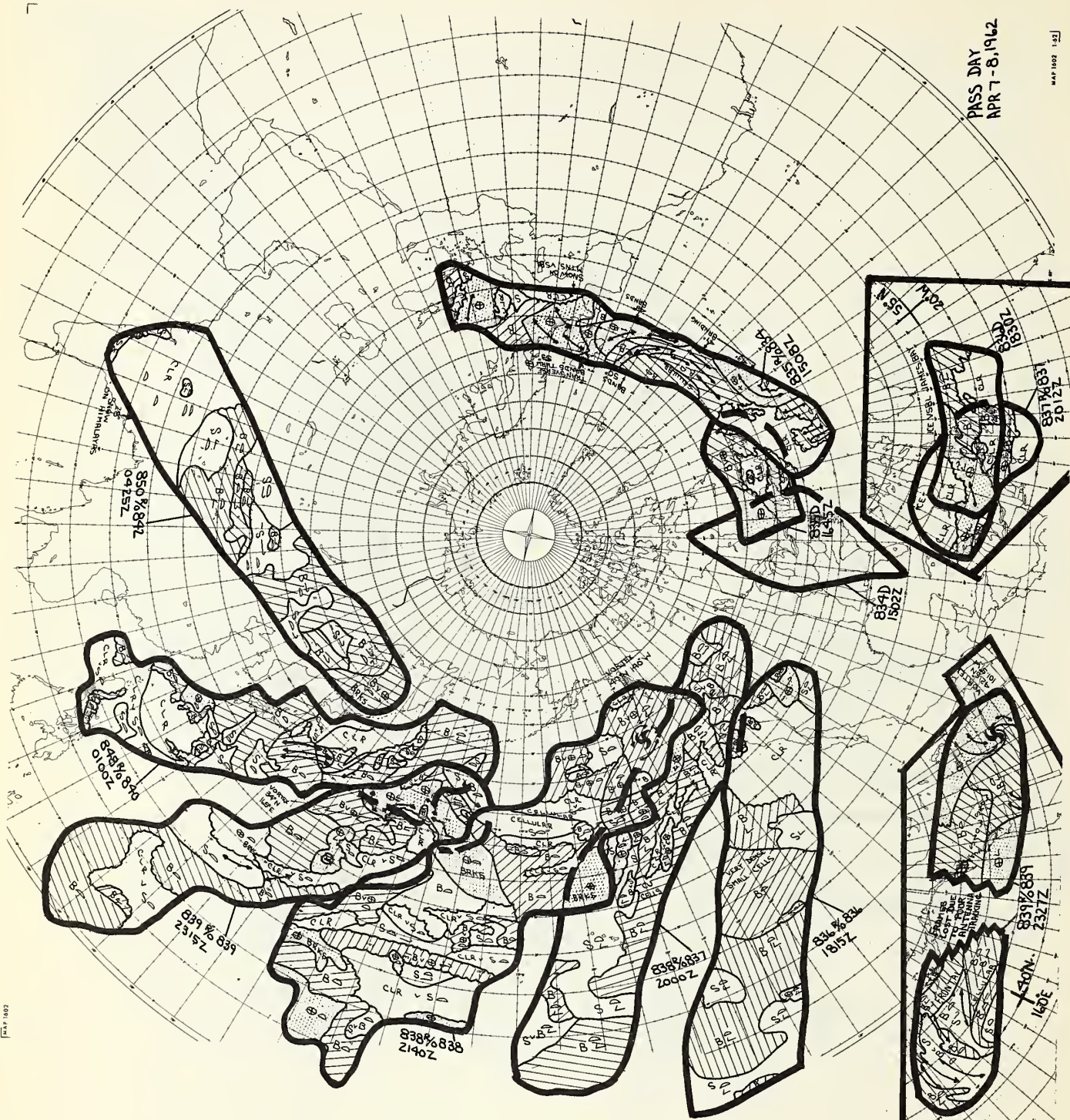
PASS DAY
APR 4-5, 1962

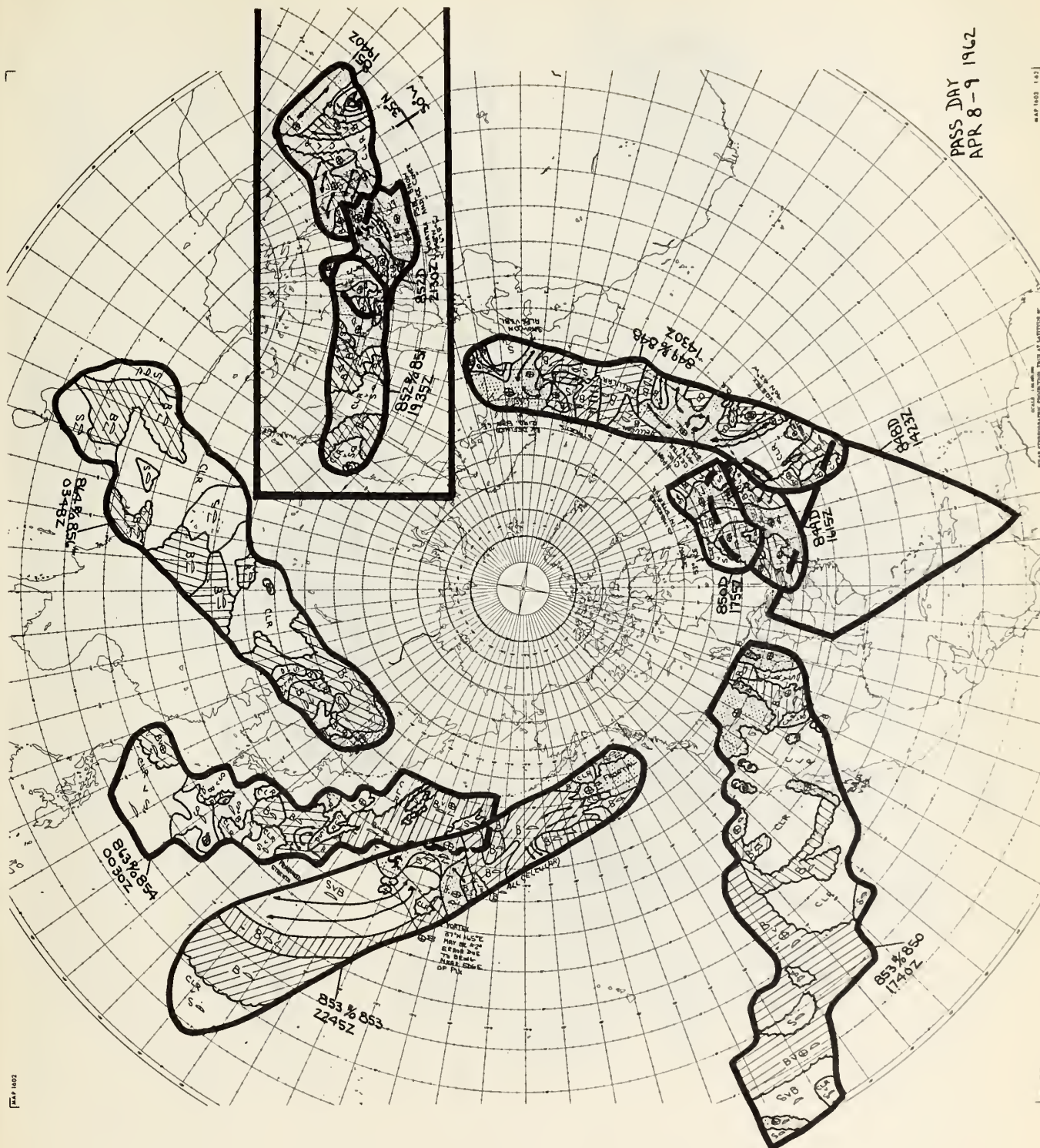
NO. 1402 1:23



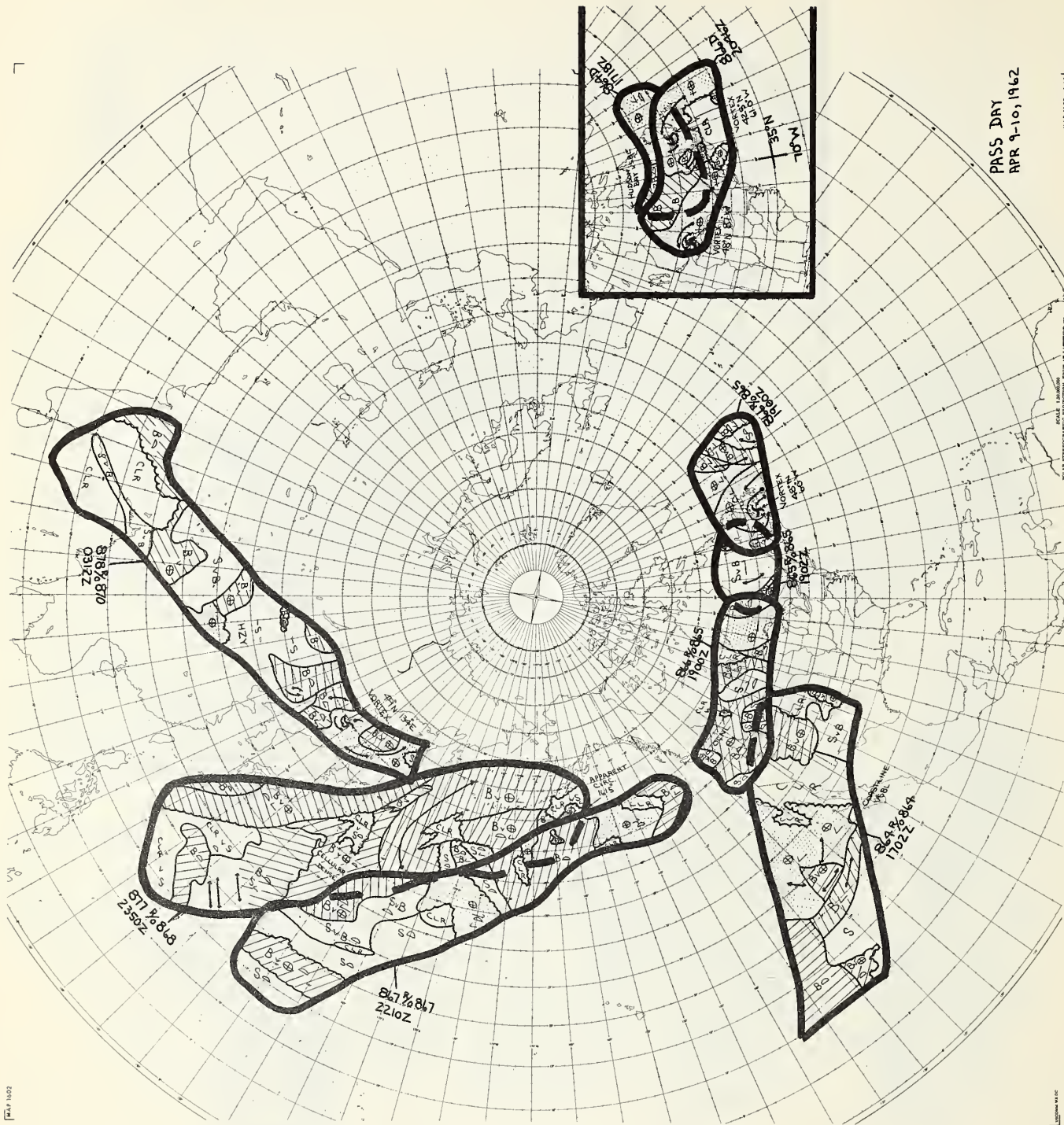
APR 5-6, 1962





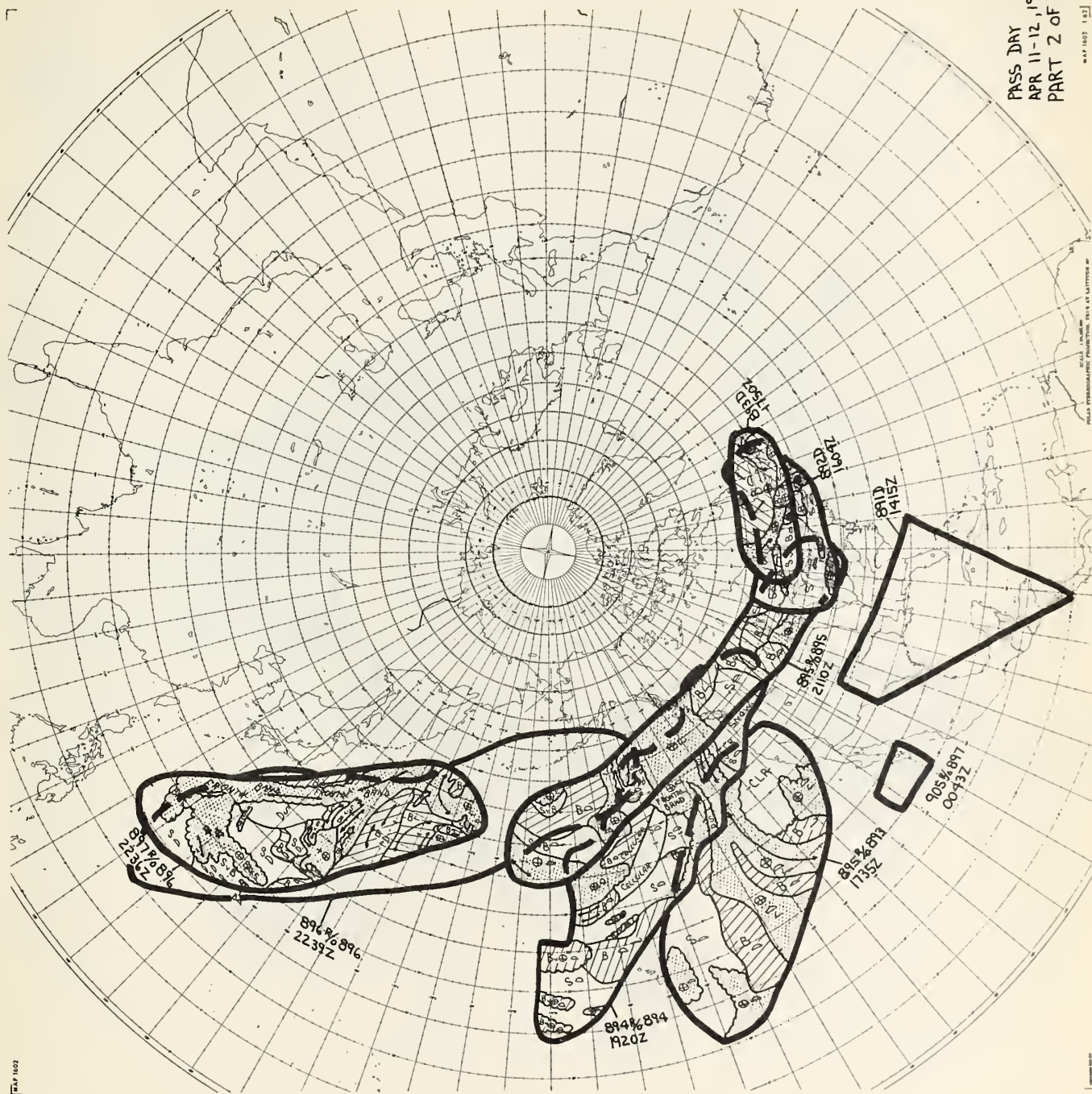


PASS DAY
APR 8-9 1962

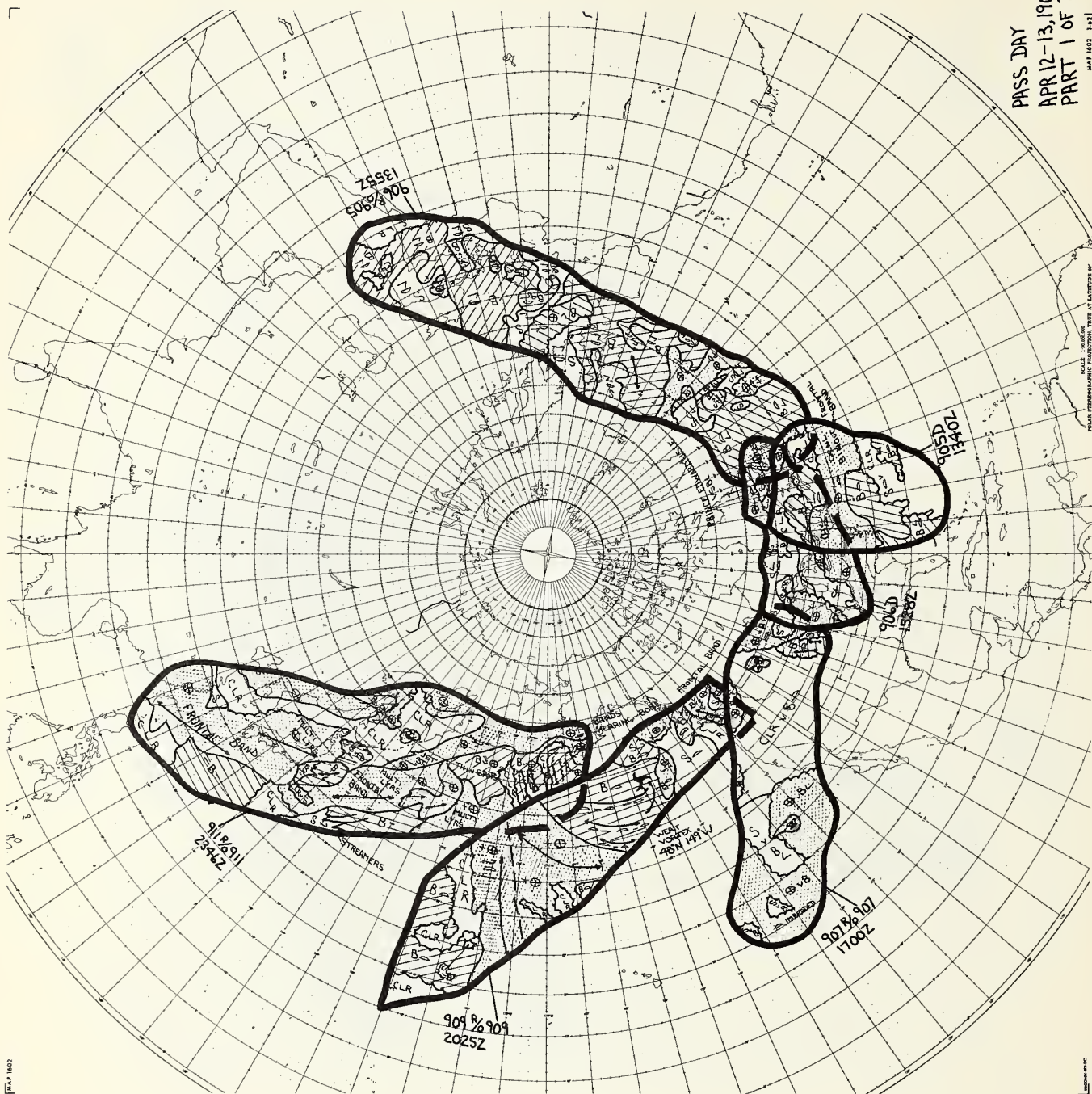


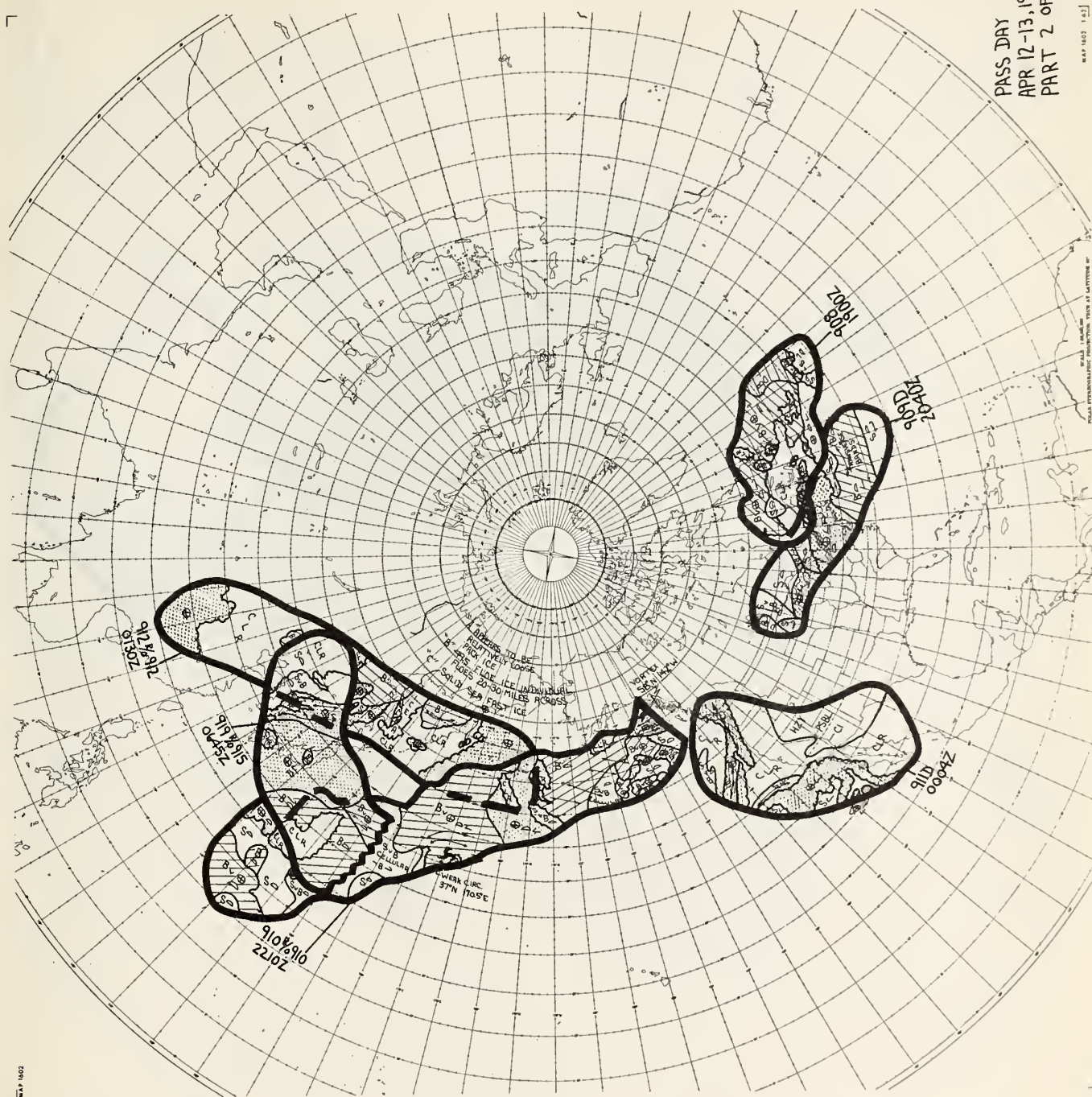


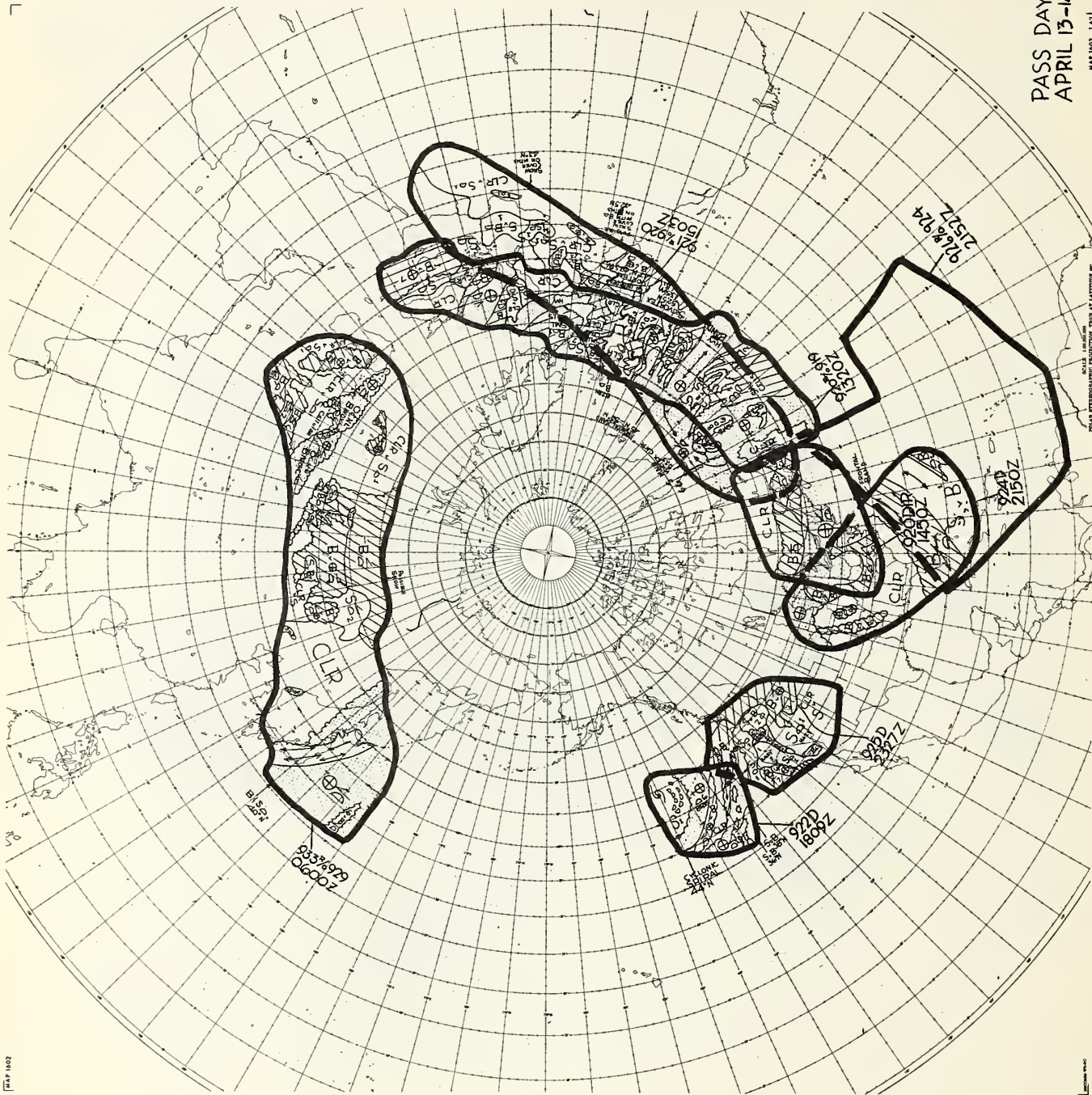
PASS DAY
APR 11-12, 1962
PART 2 OF 2



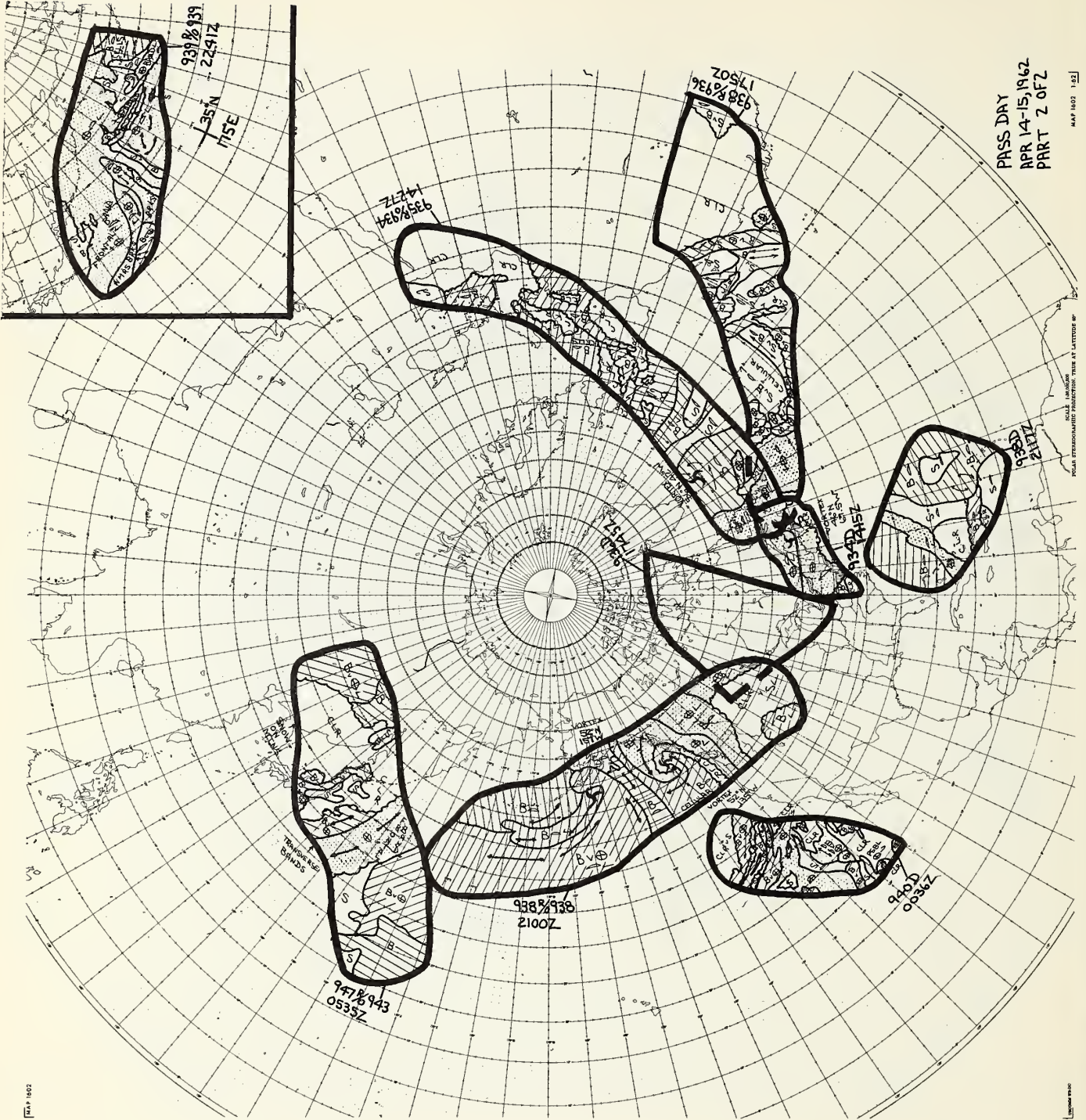
SCALE 1:500,000
POLAR STEREOGRAPHIC PROJECTION, TRUE AT LATITUDE 60°



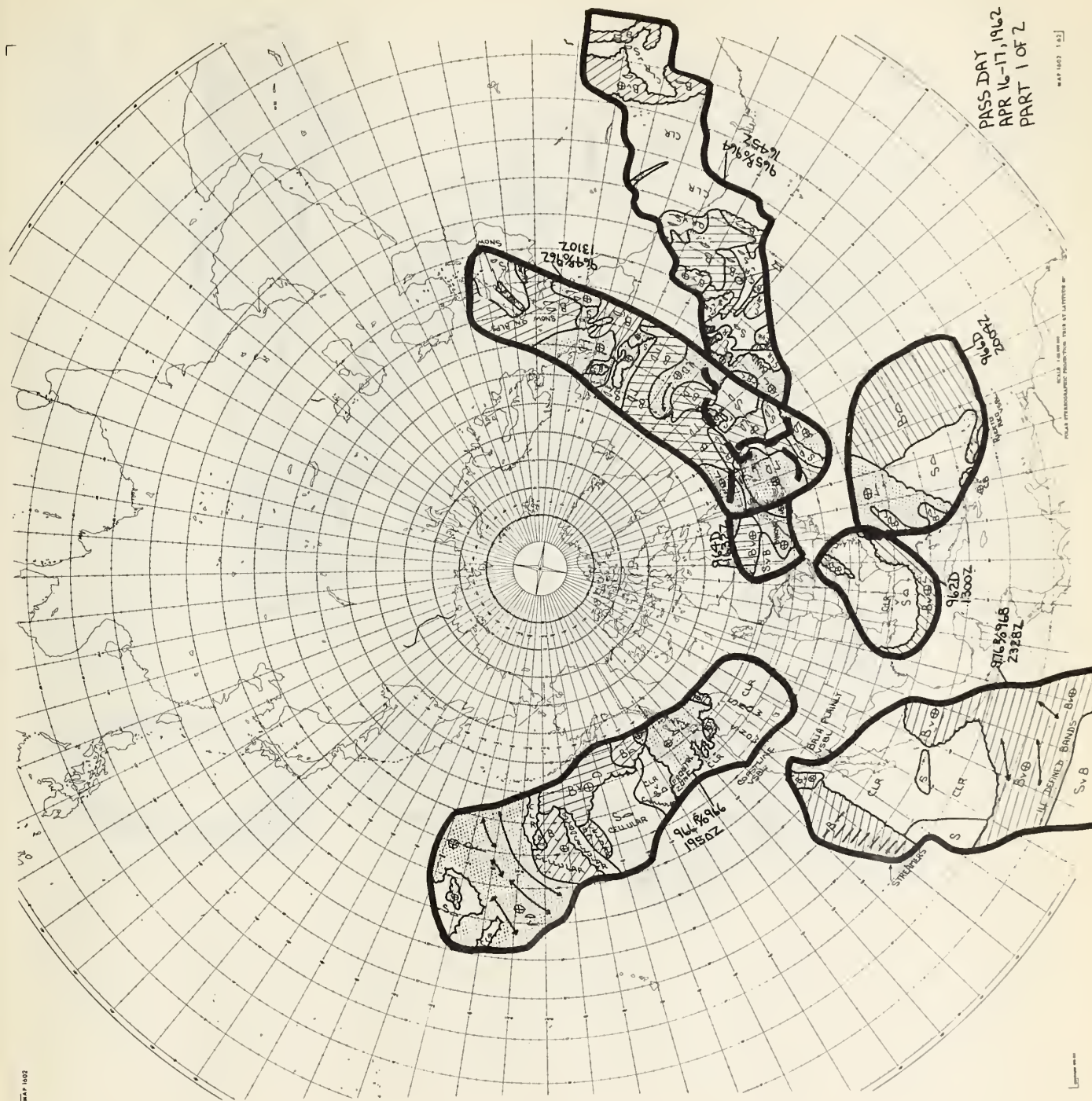




PASS DAY
APRIL 13-14 1962

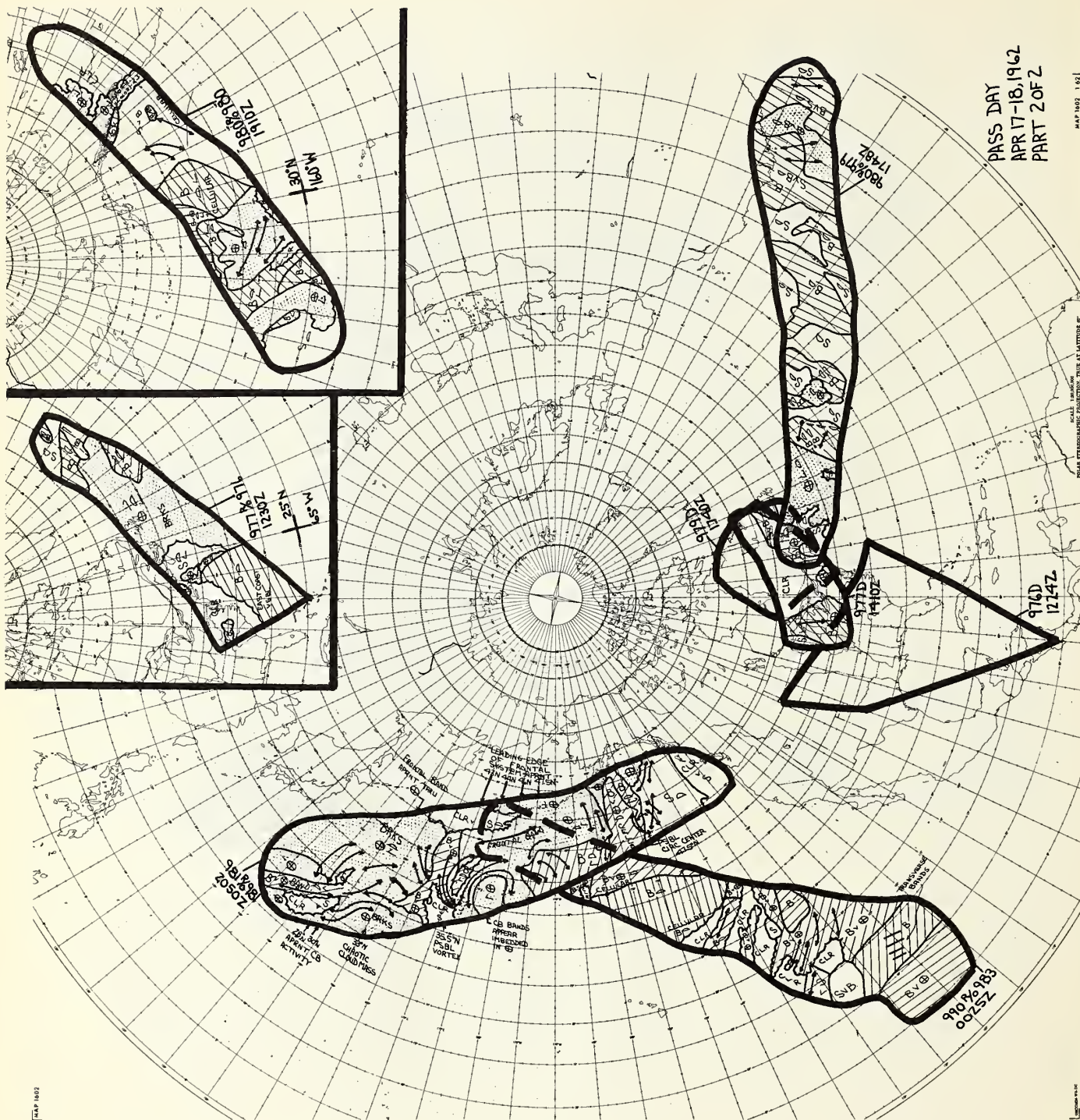


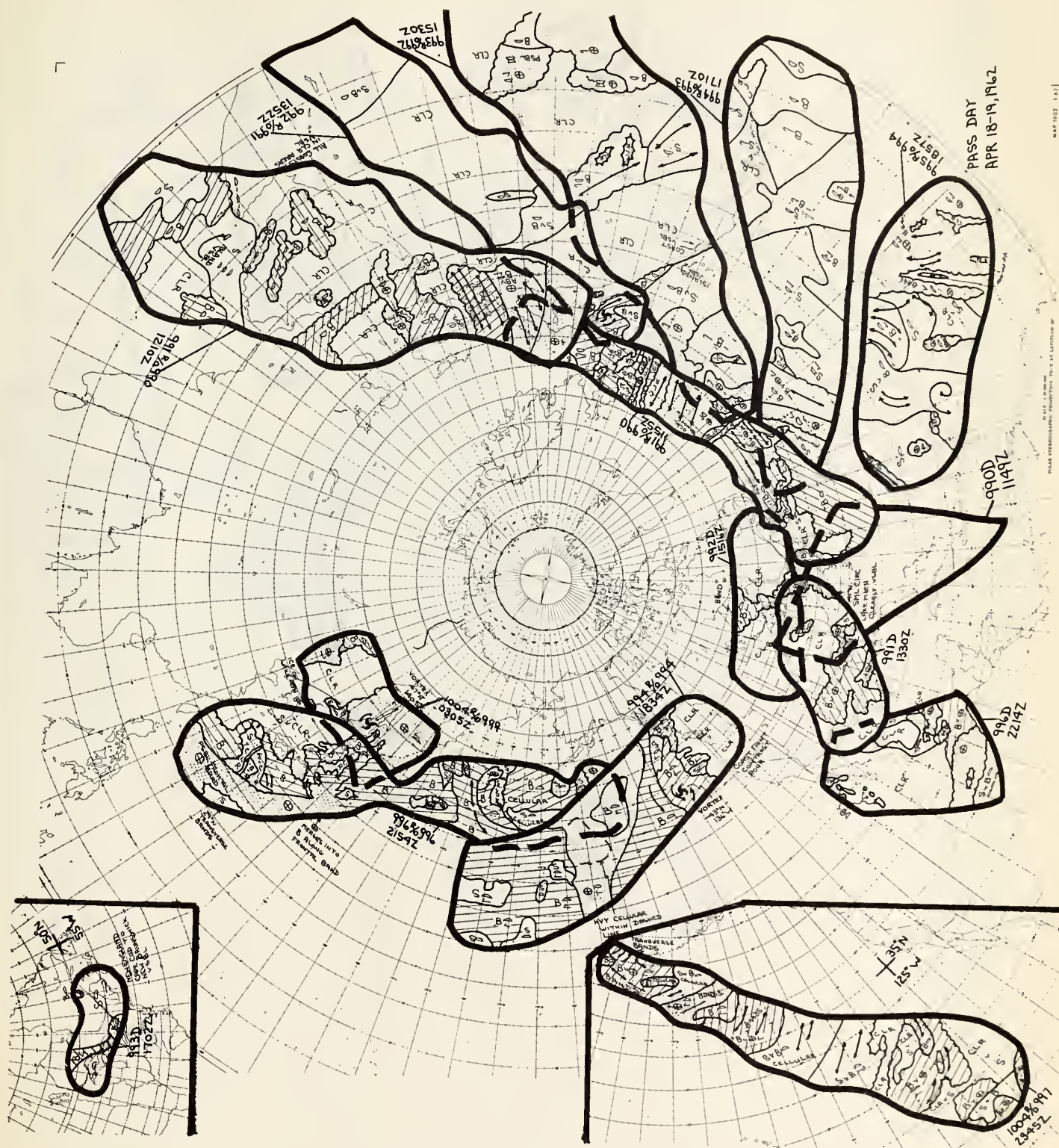
... and ...



1982 1983 1984

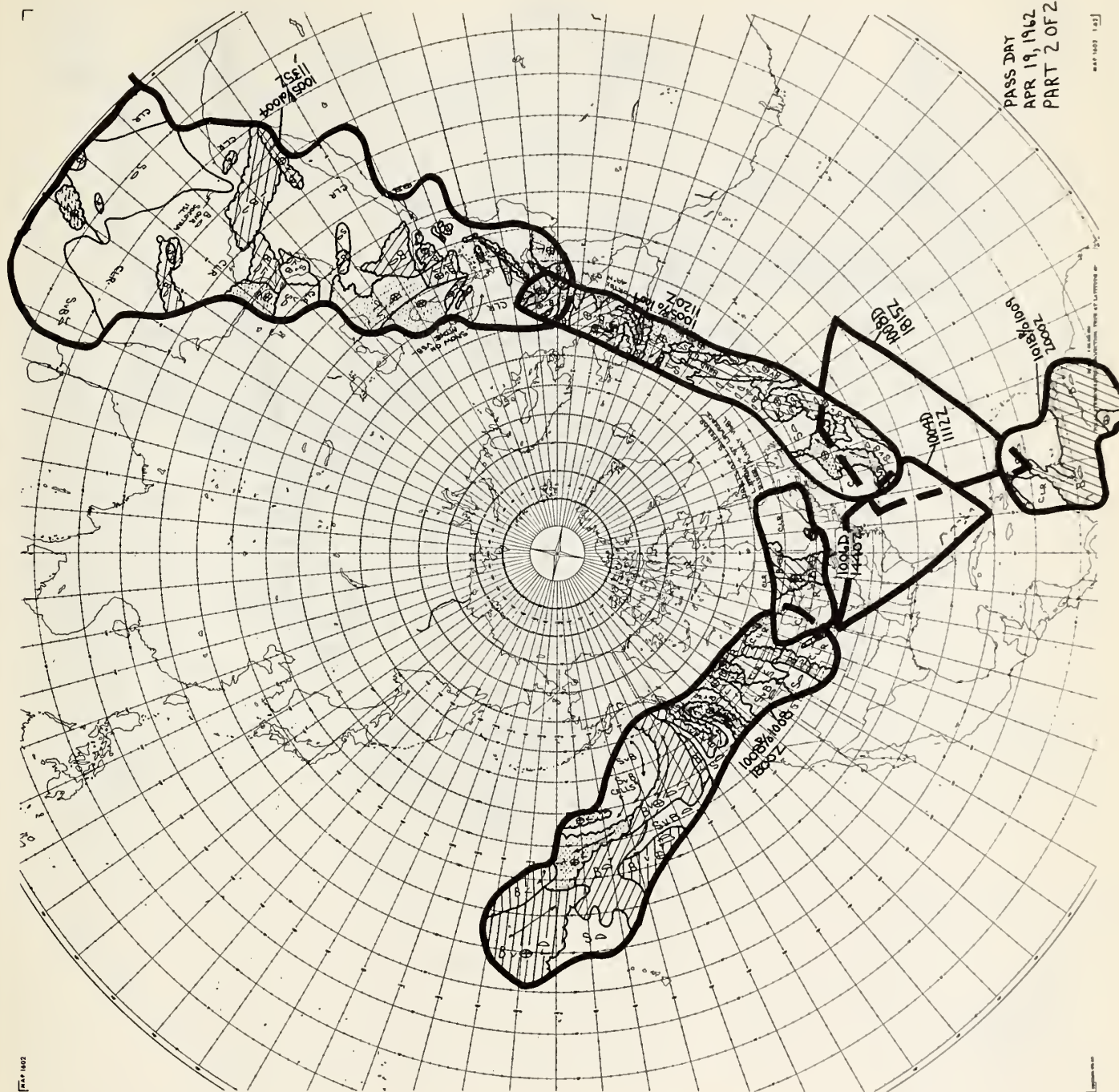






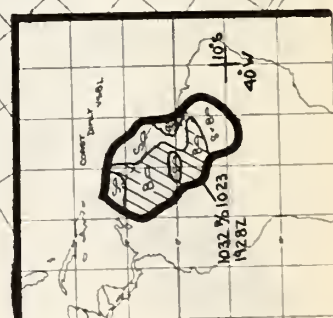
PASS DAY
APR 19, 1962
PART 2 OF 2

MAP 1402 1:25



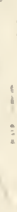
MAP 1402

MAP 1402



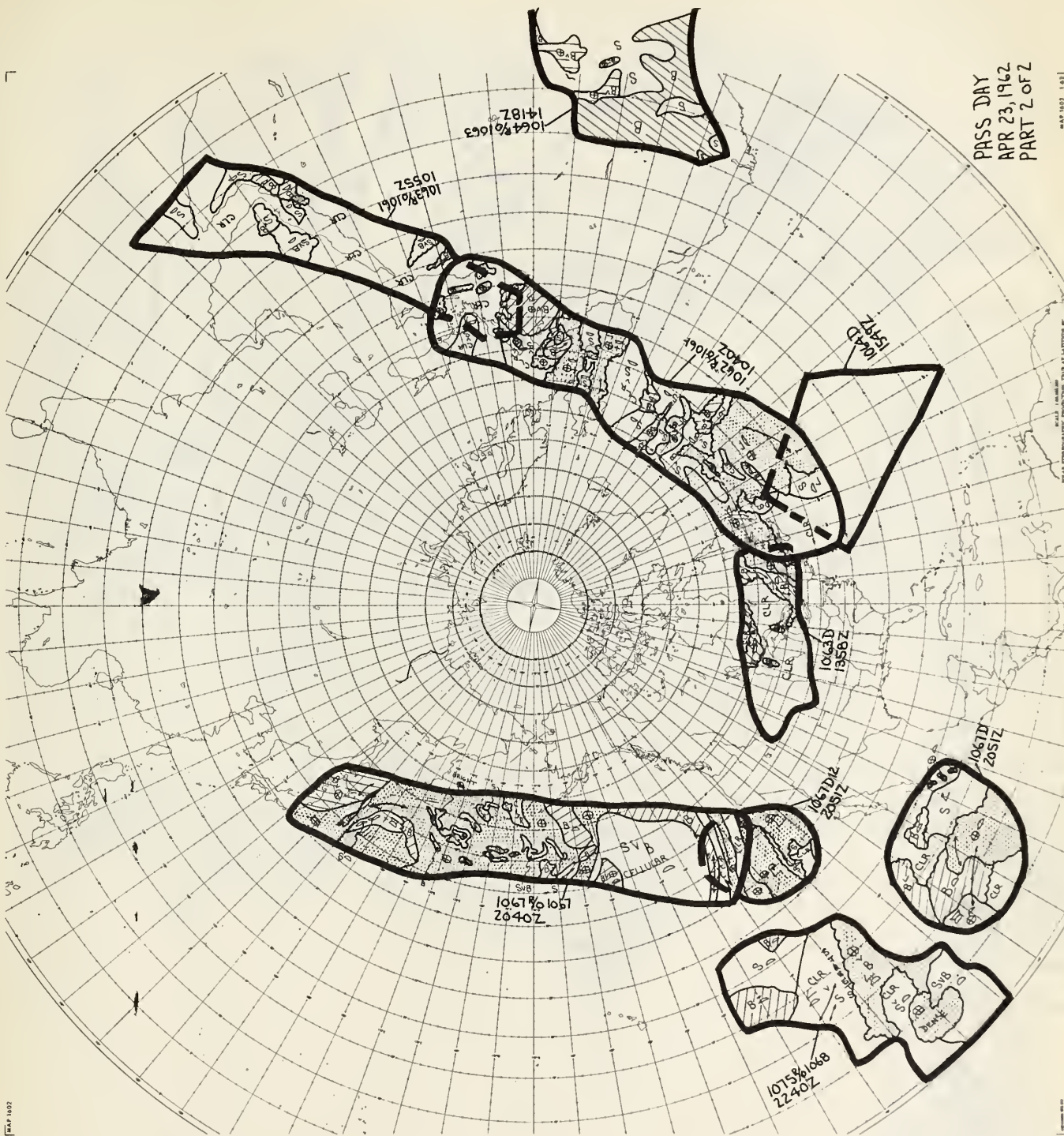
PASS DAY
APR 20. 1962
PART 2 OF 2

MAF 1007 1027



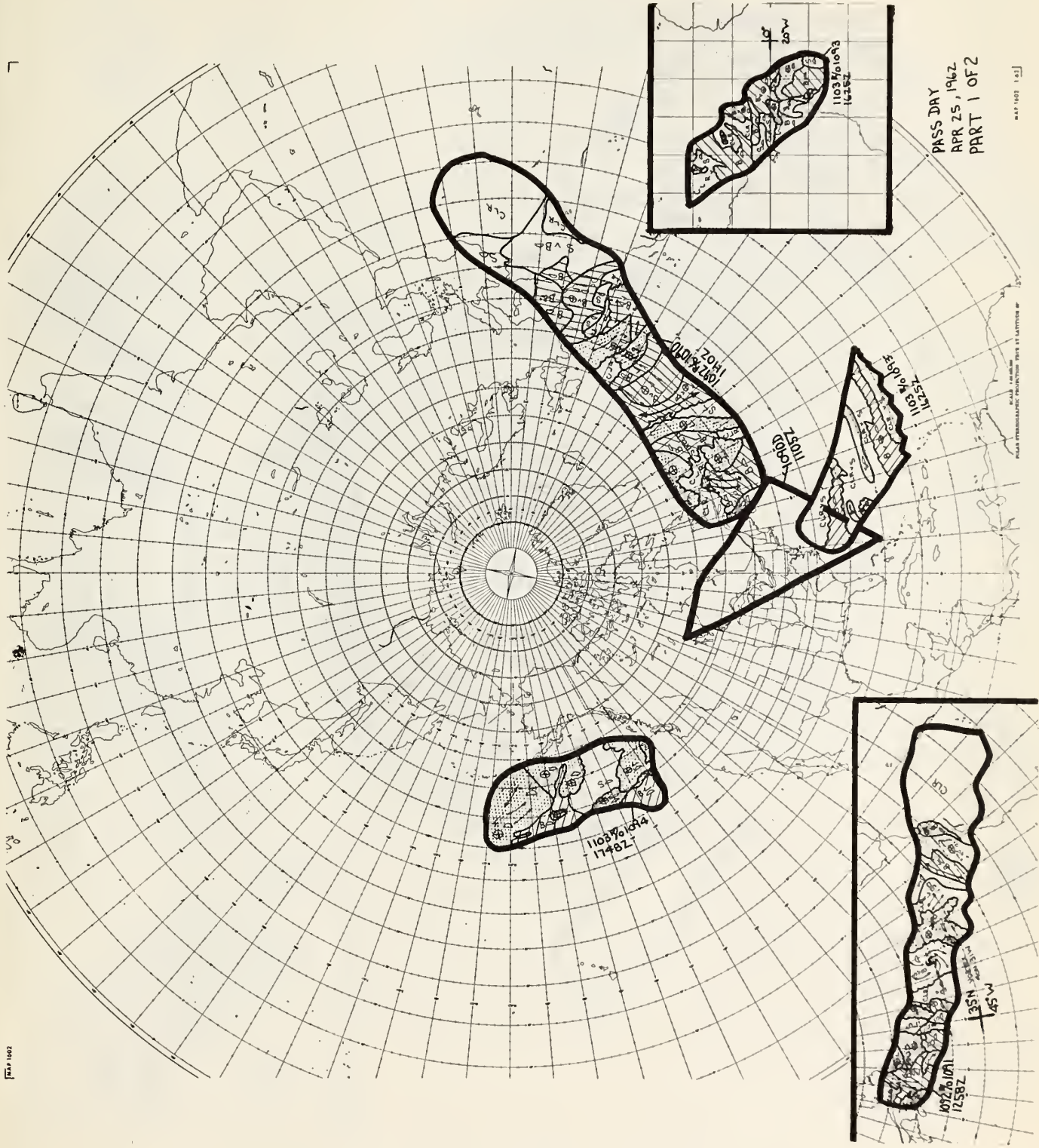
APR 1997 1621





PASS DAY
APR 23, 1962
PART 2 OF 2

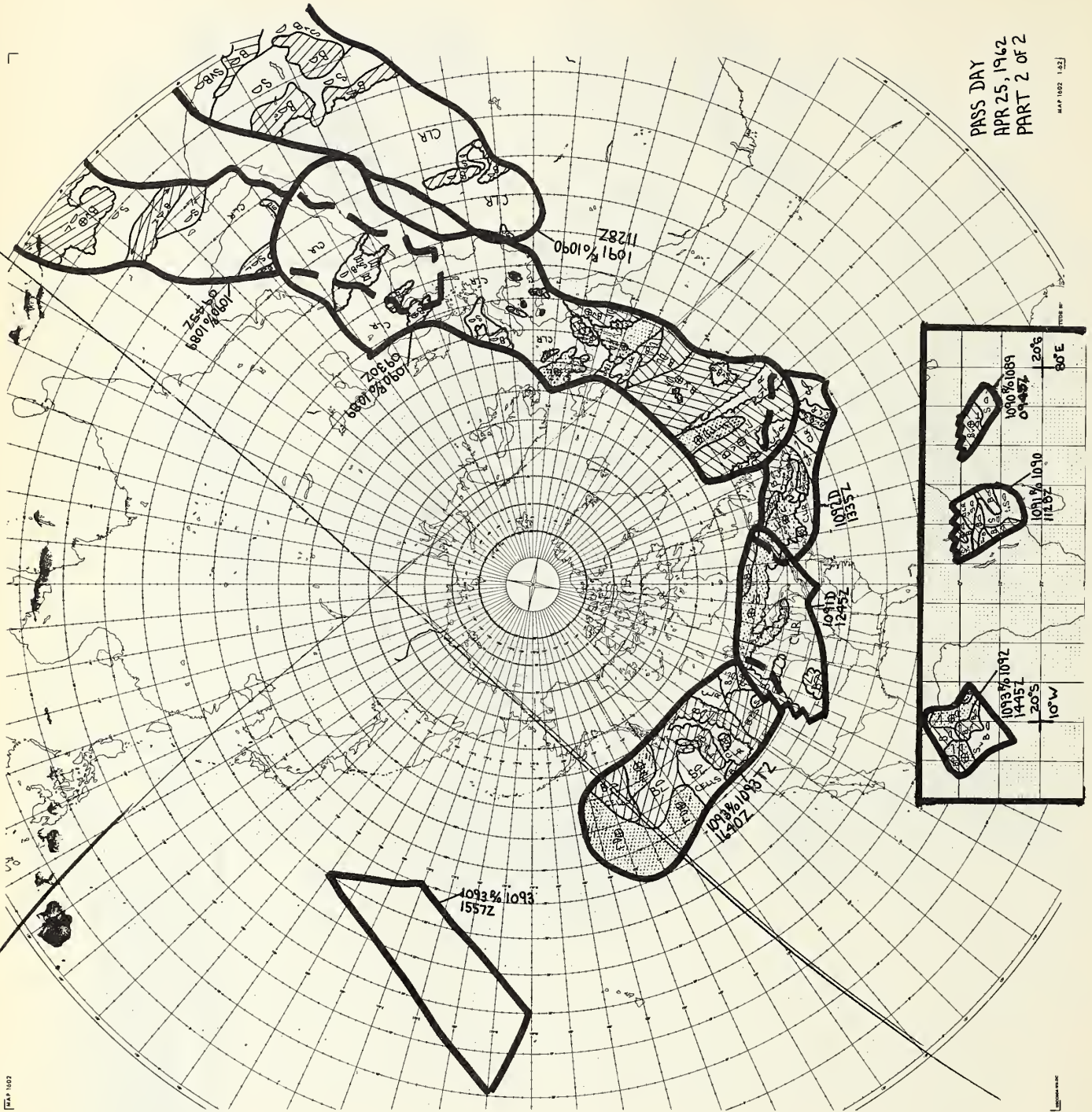
MAY 1962 141



PASS DAY
APR 25, 1962
PART 1 OF 2

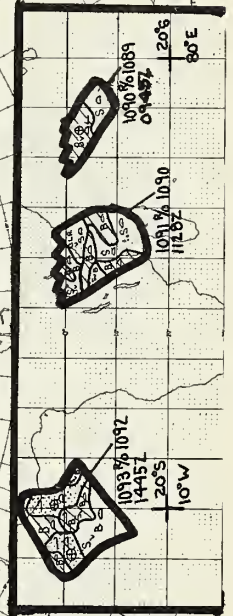
MAP 1001 102

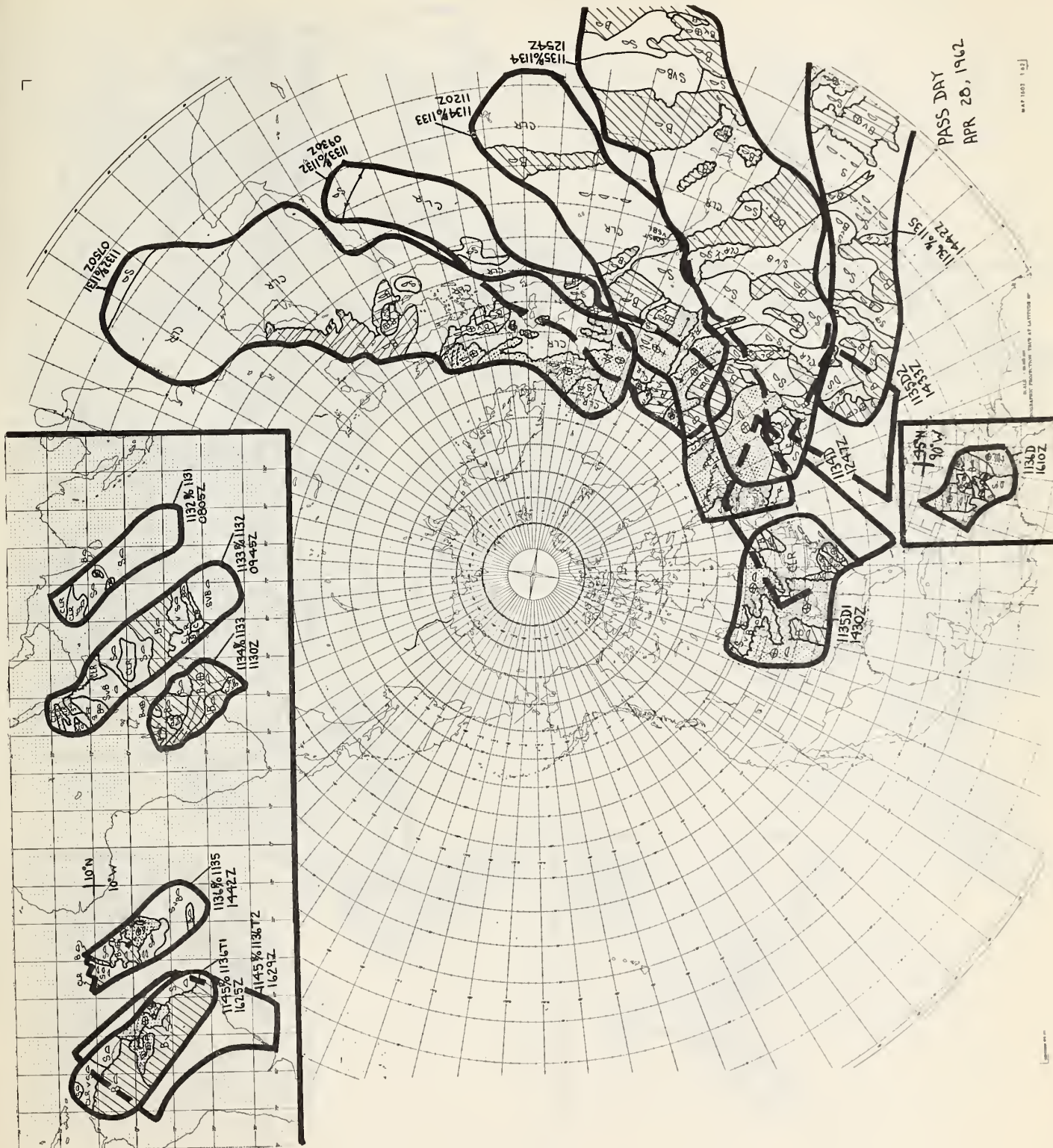
POLAR PROJECTION MAP OF THE ARCTIC REGION



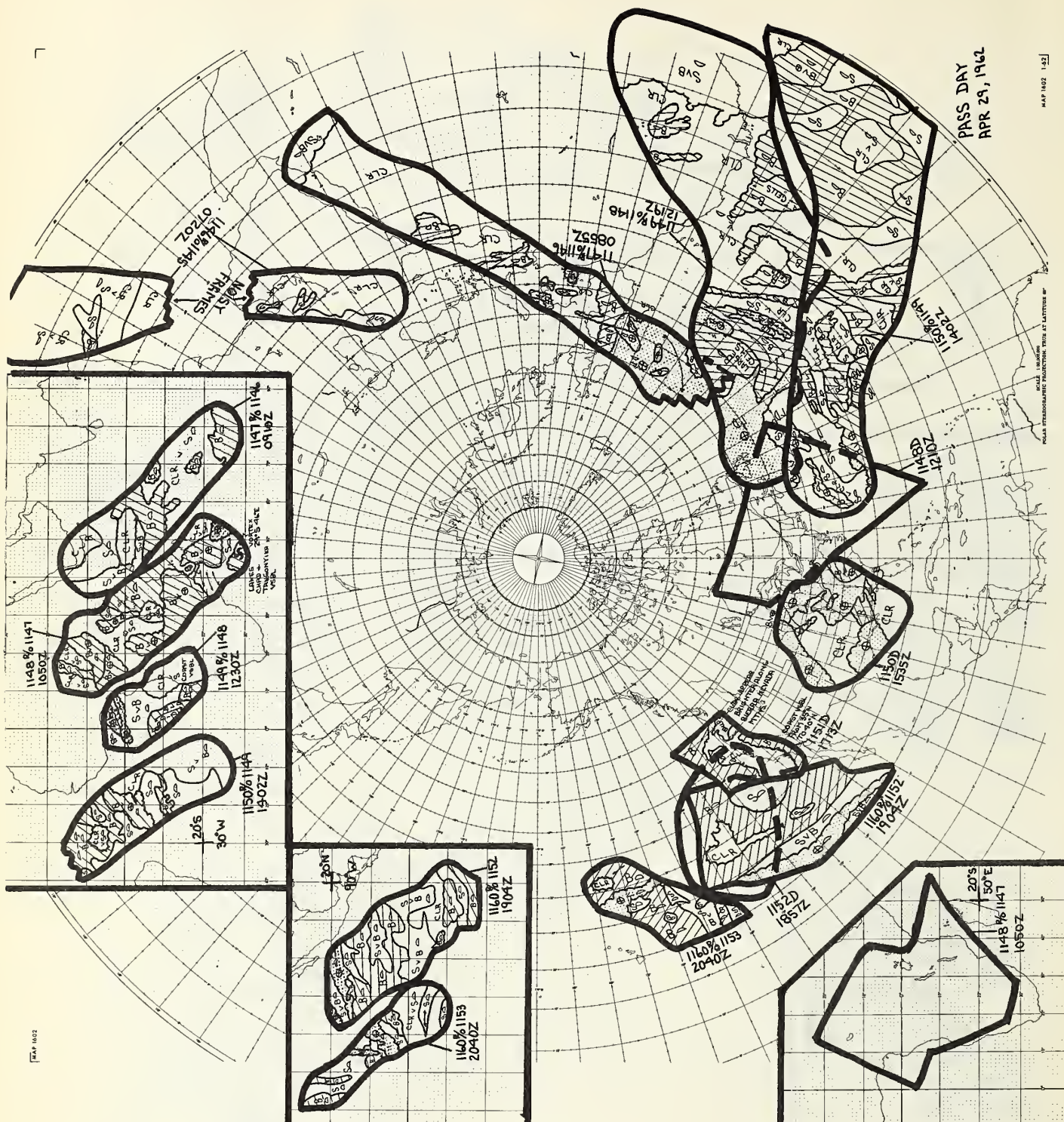
PASS DAY
APR 25, 1962
PART 2 of 2

MAP 1002 1:50





MAP 1602

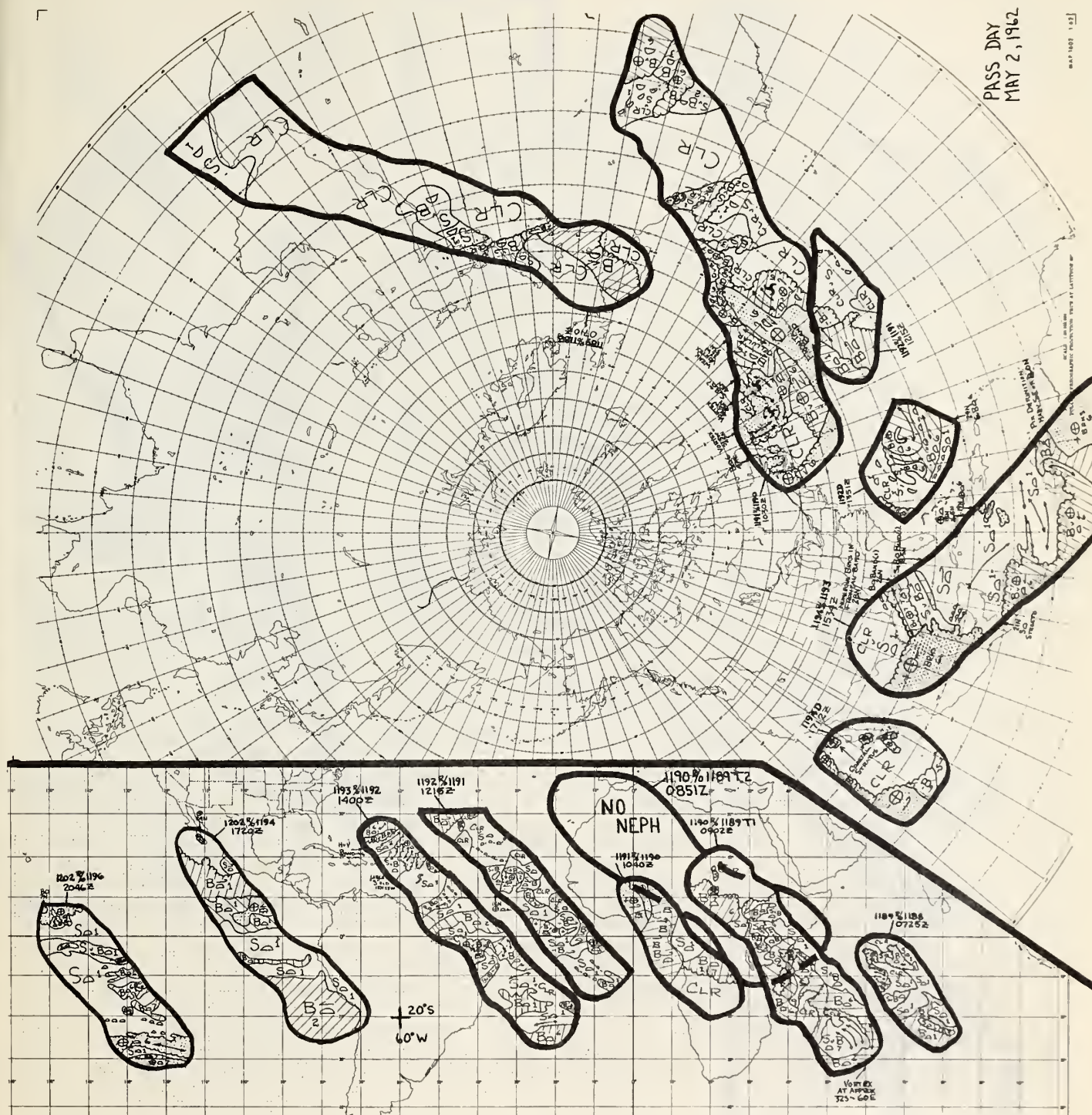


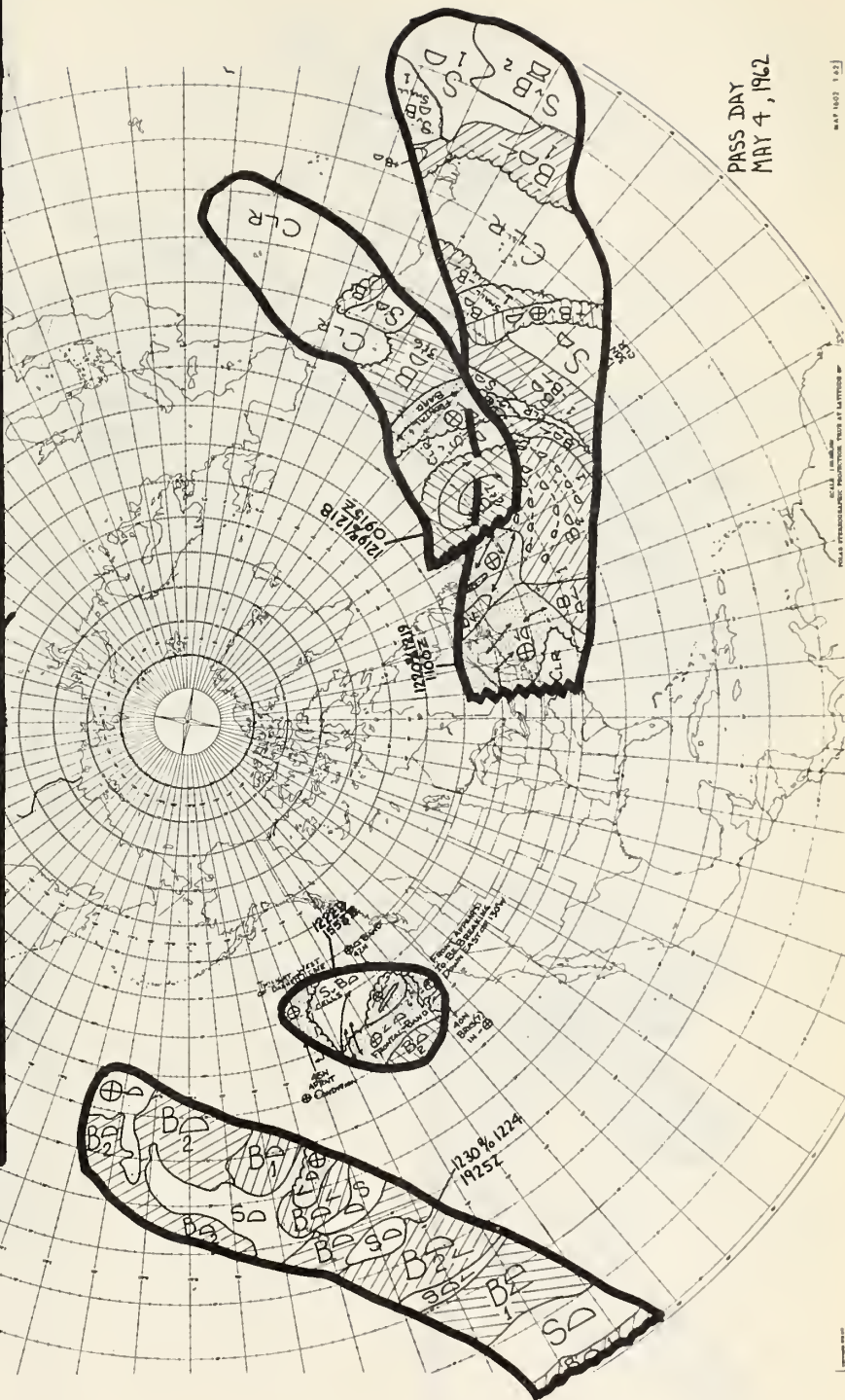
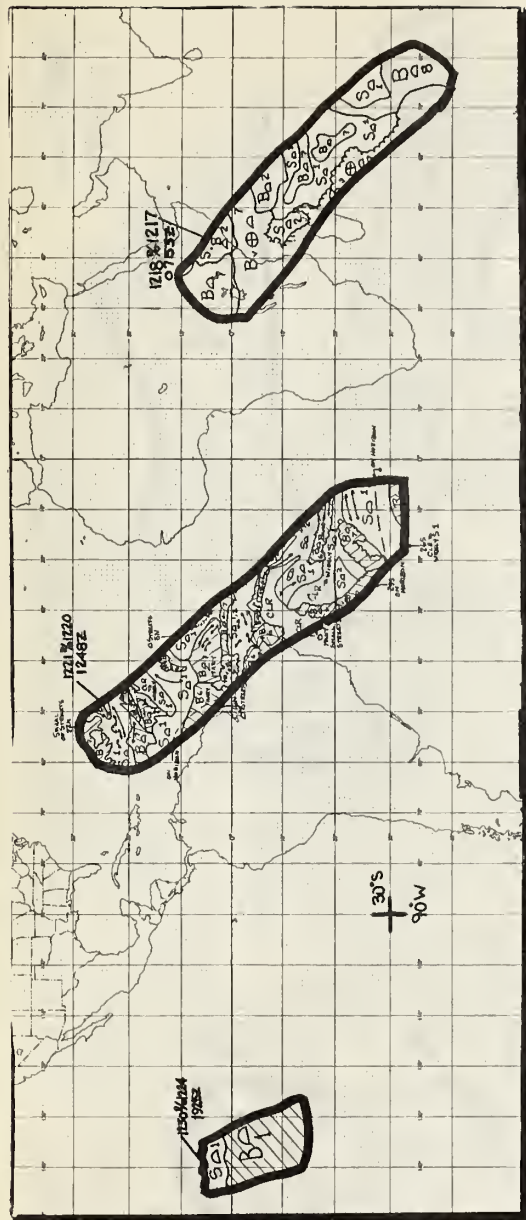
MAP 1807 1.621



PASS DAY
MAY 2, 1962

MAY 1962 127





PASS DAY
MAY 4, 1962

1218 & 1217

1221 & 1220

1230 & 1229

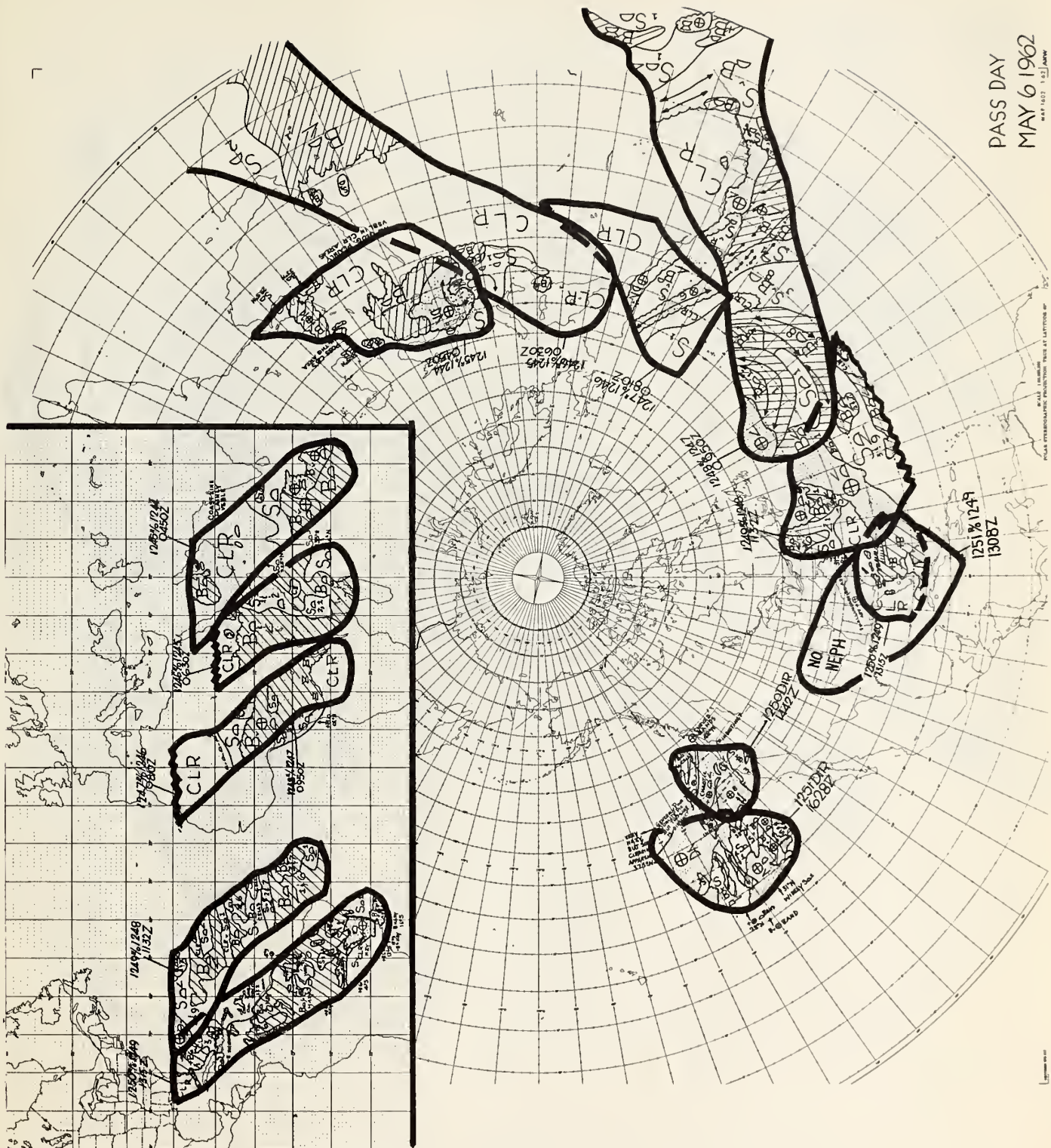
1218 & 1217

1221 & 1220

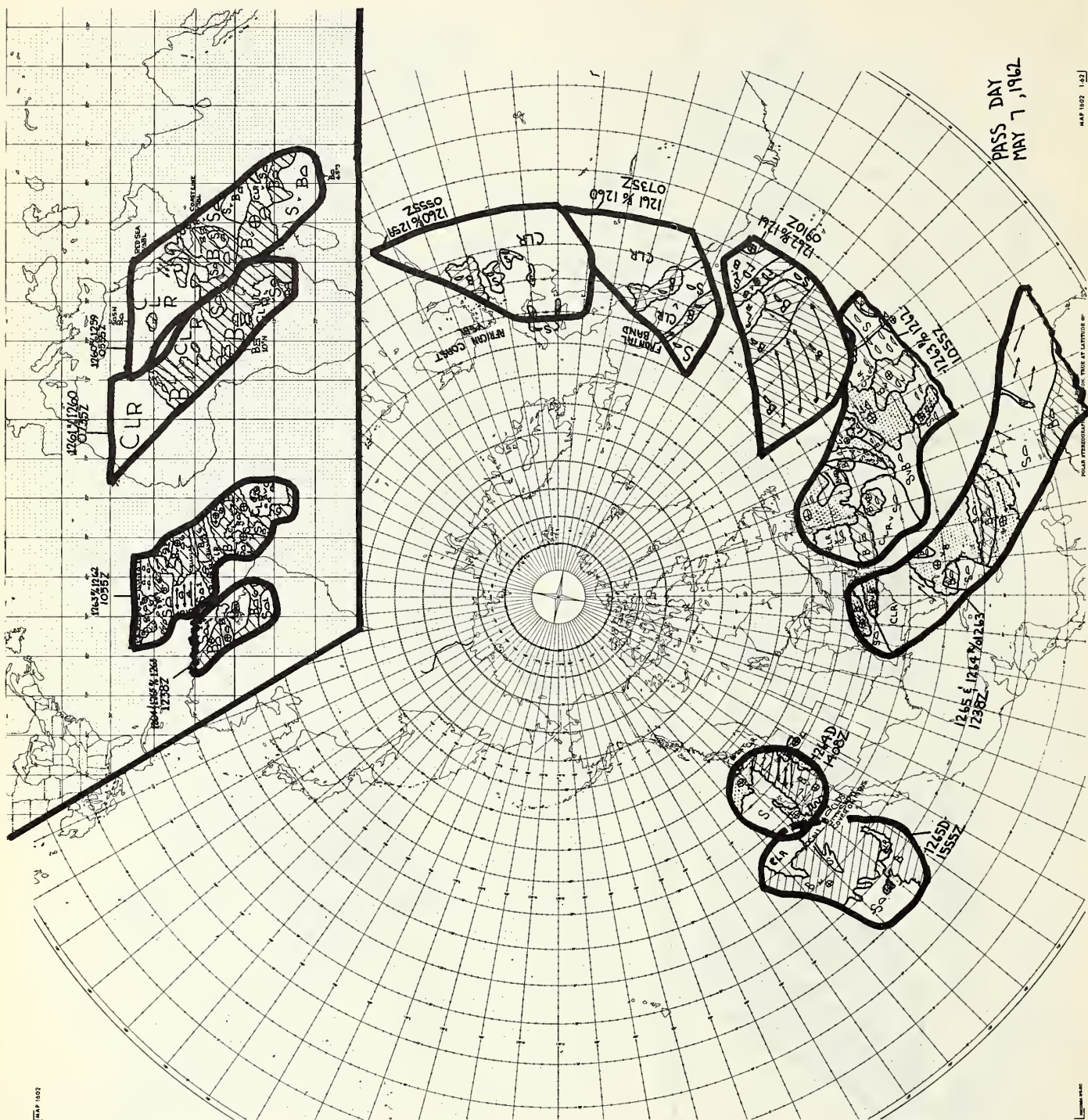
1230 & 1229

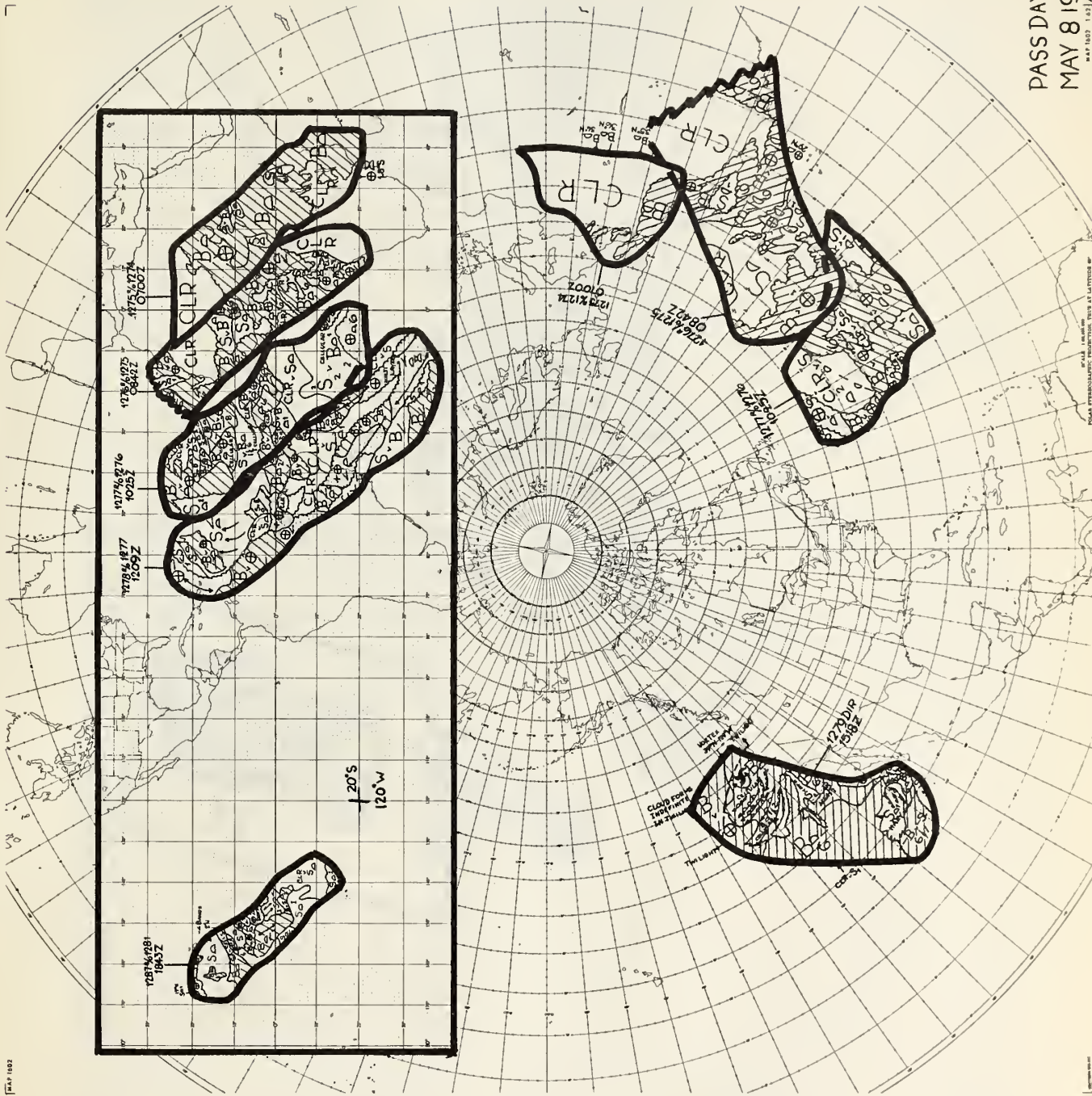
POLAR STRATIGRAPHIC PREVENTION. TRUE AT LATITUDE 0°





PASS DAY
MAY 6 1962





PASS DAY
MAY 8 1962
MAY 1962 133

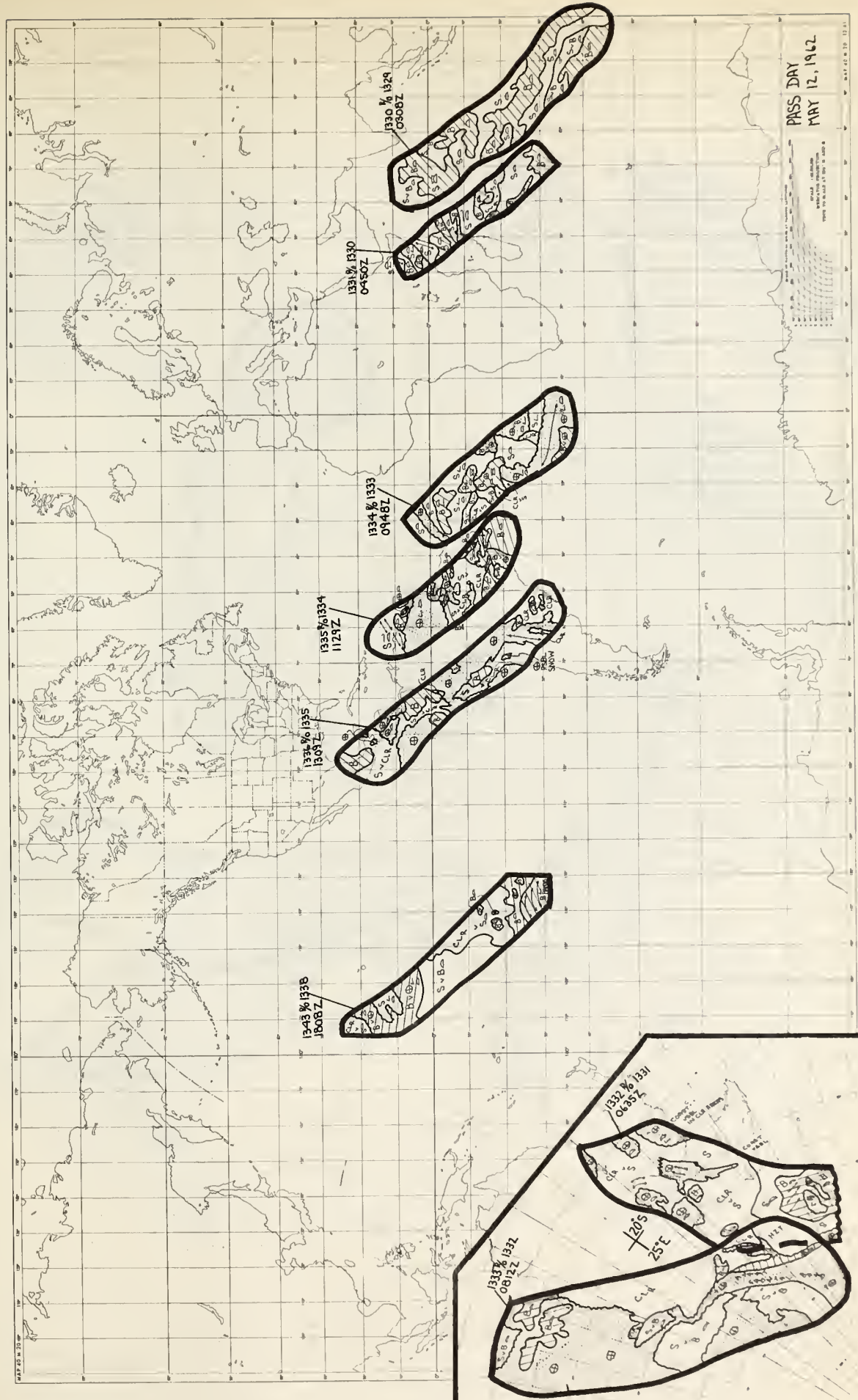




PASS DAY
MAY 10, 1962

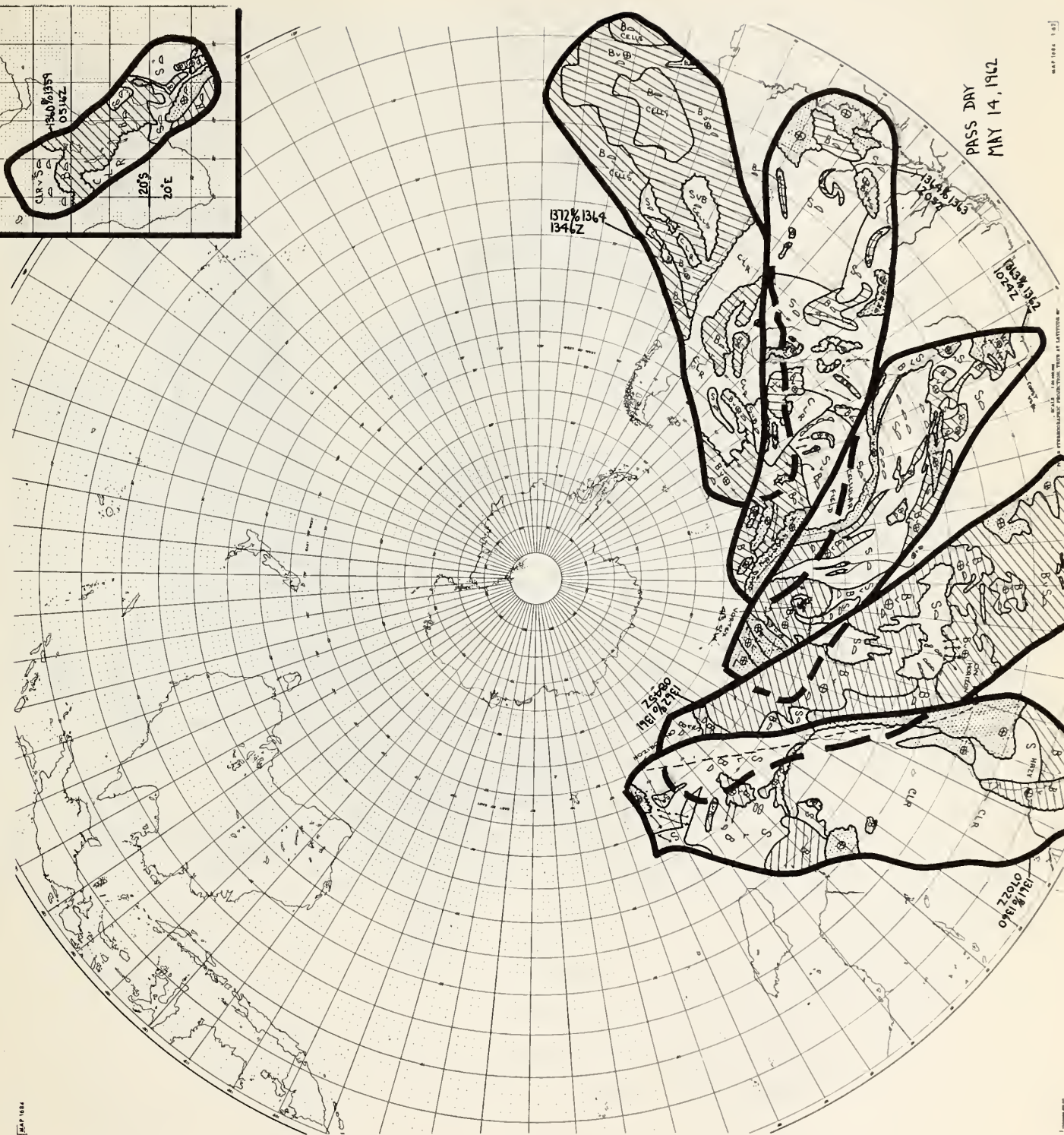


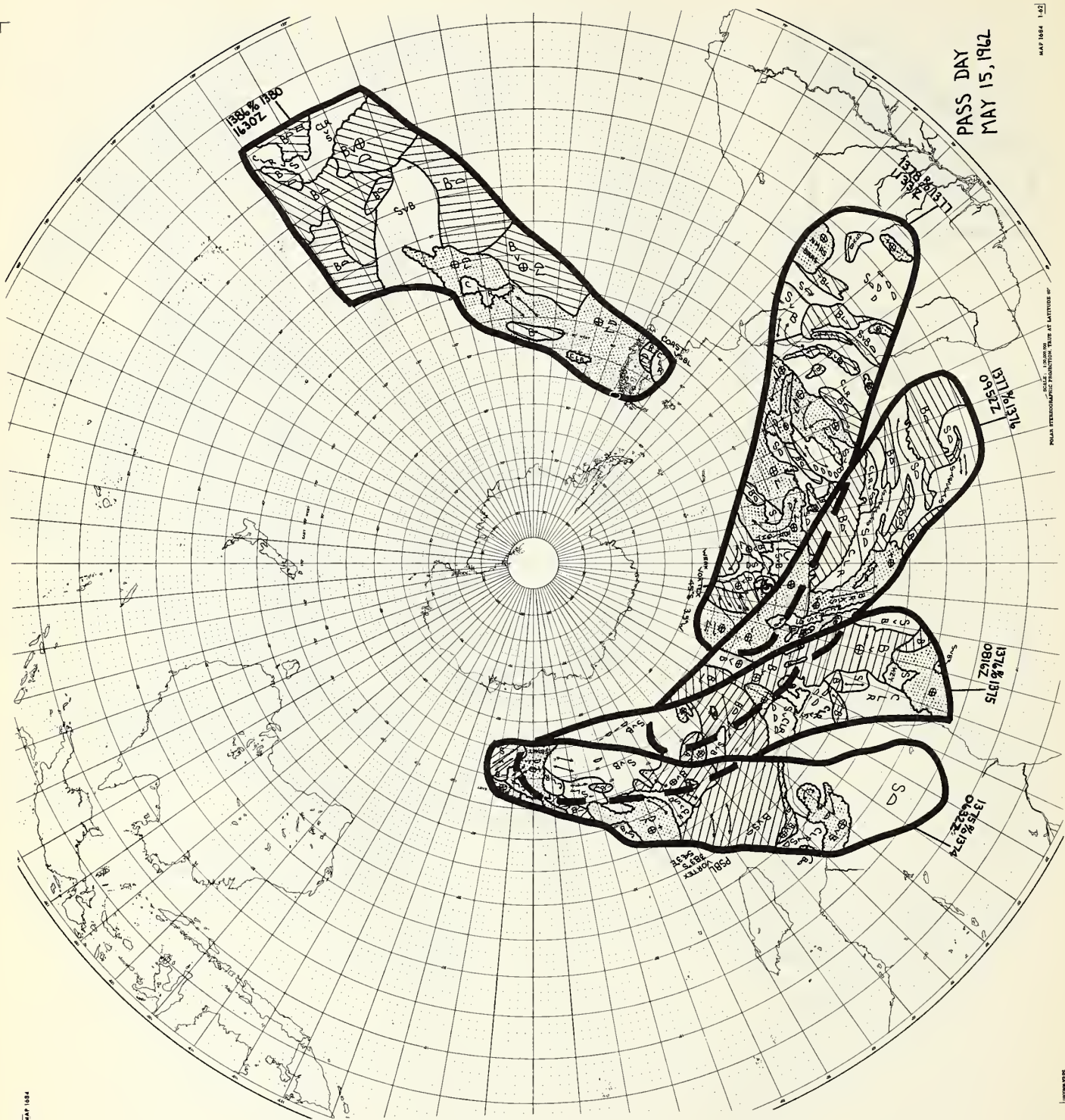
PASS DAY
MAY 11, 1962



PASS DAY



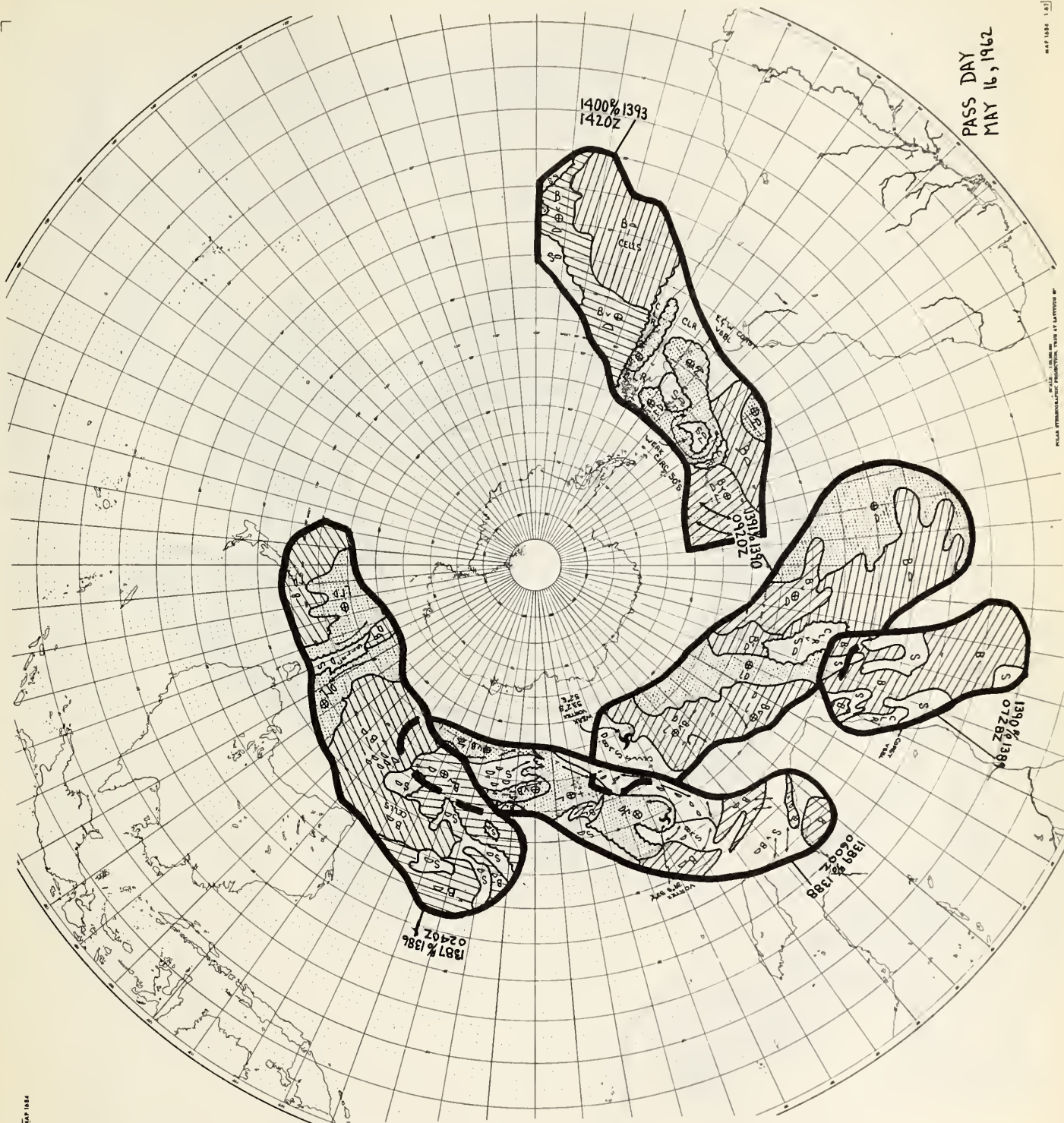




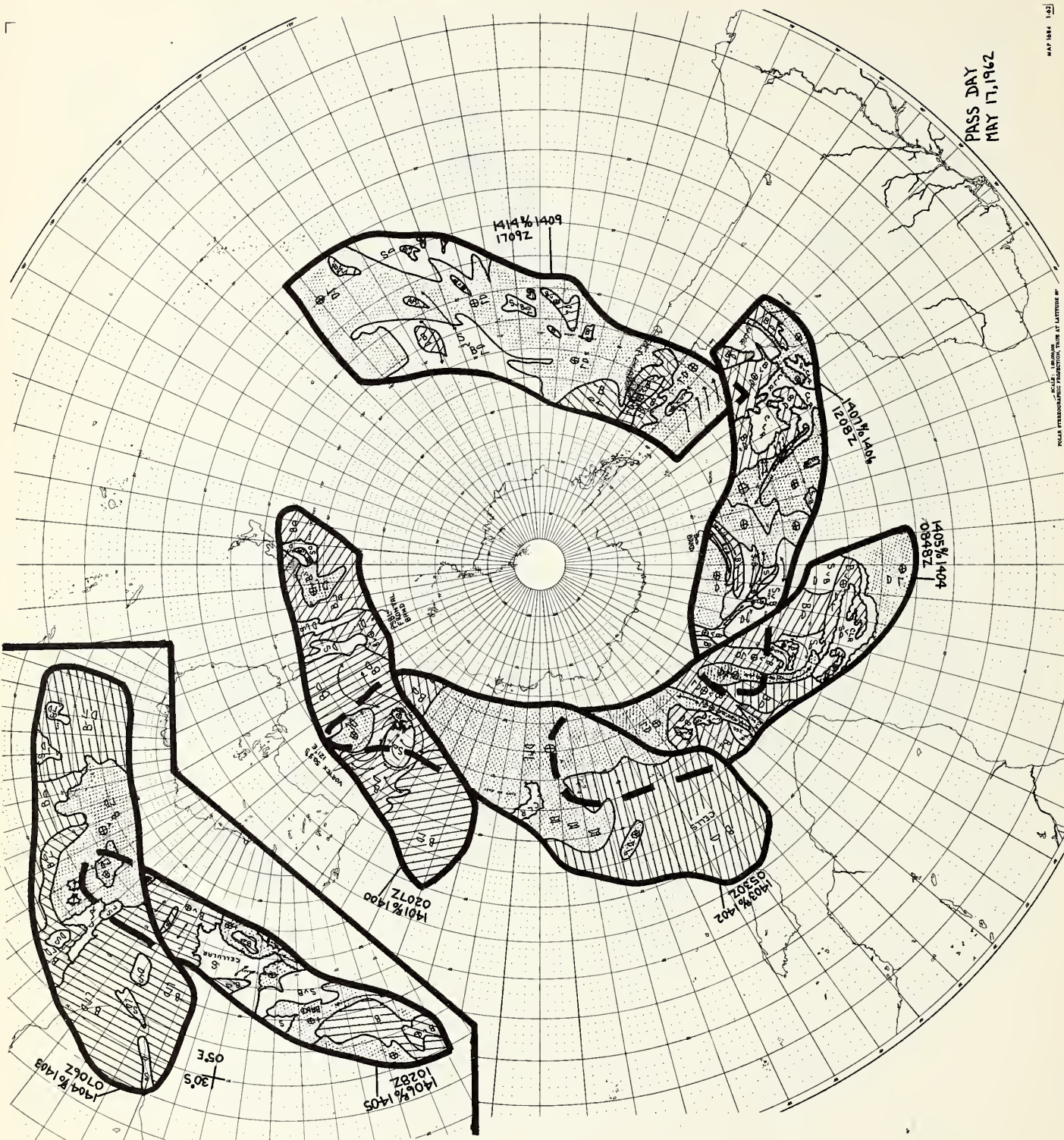
PASS DAY
MAY 15, 1962

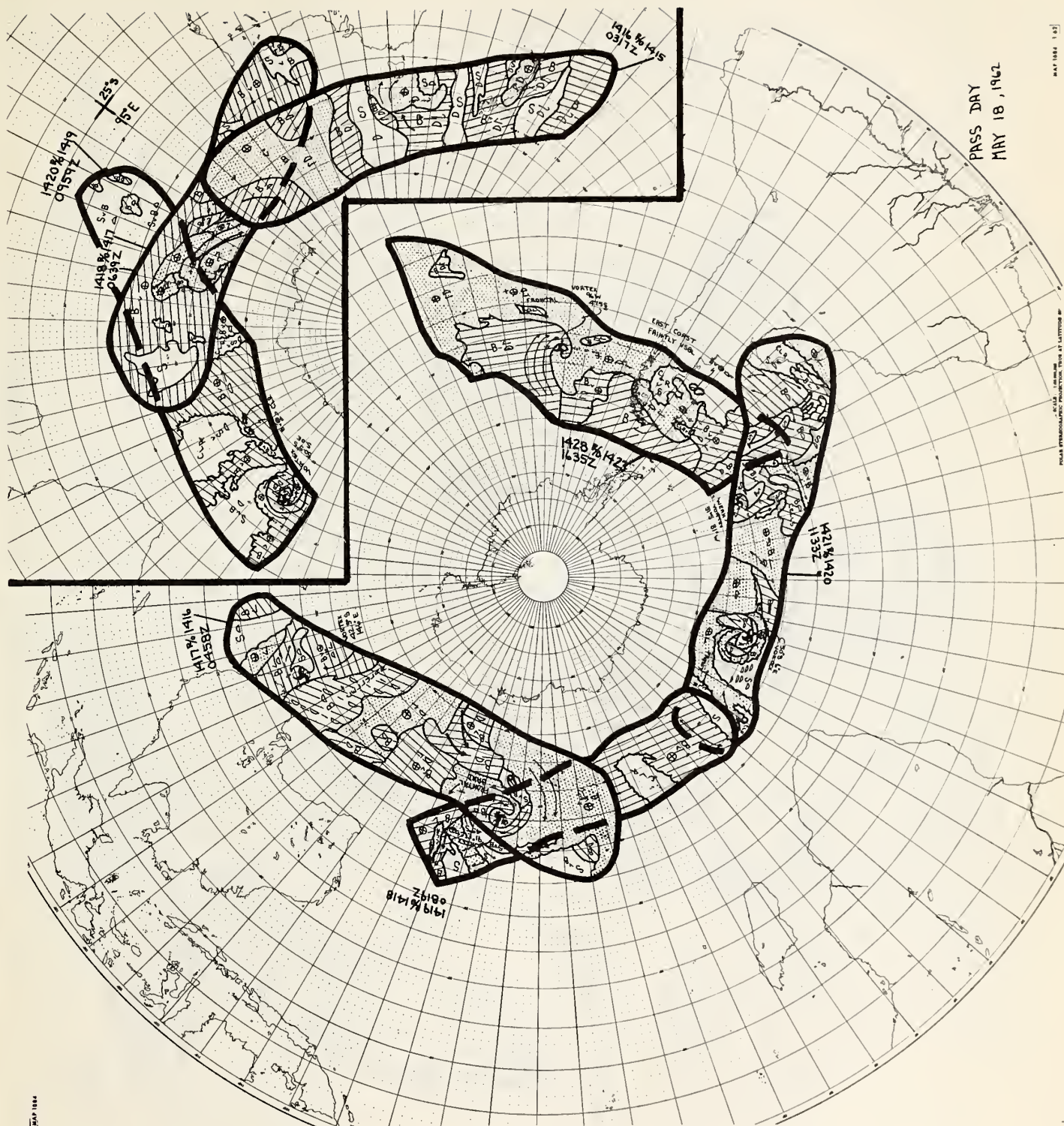
MAP 1064 1-62

NOAA HYDROGRAPHIC SURVEY VESSEL AT LATITUDE 90°

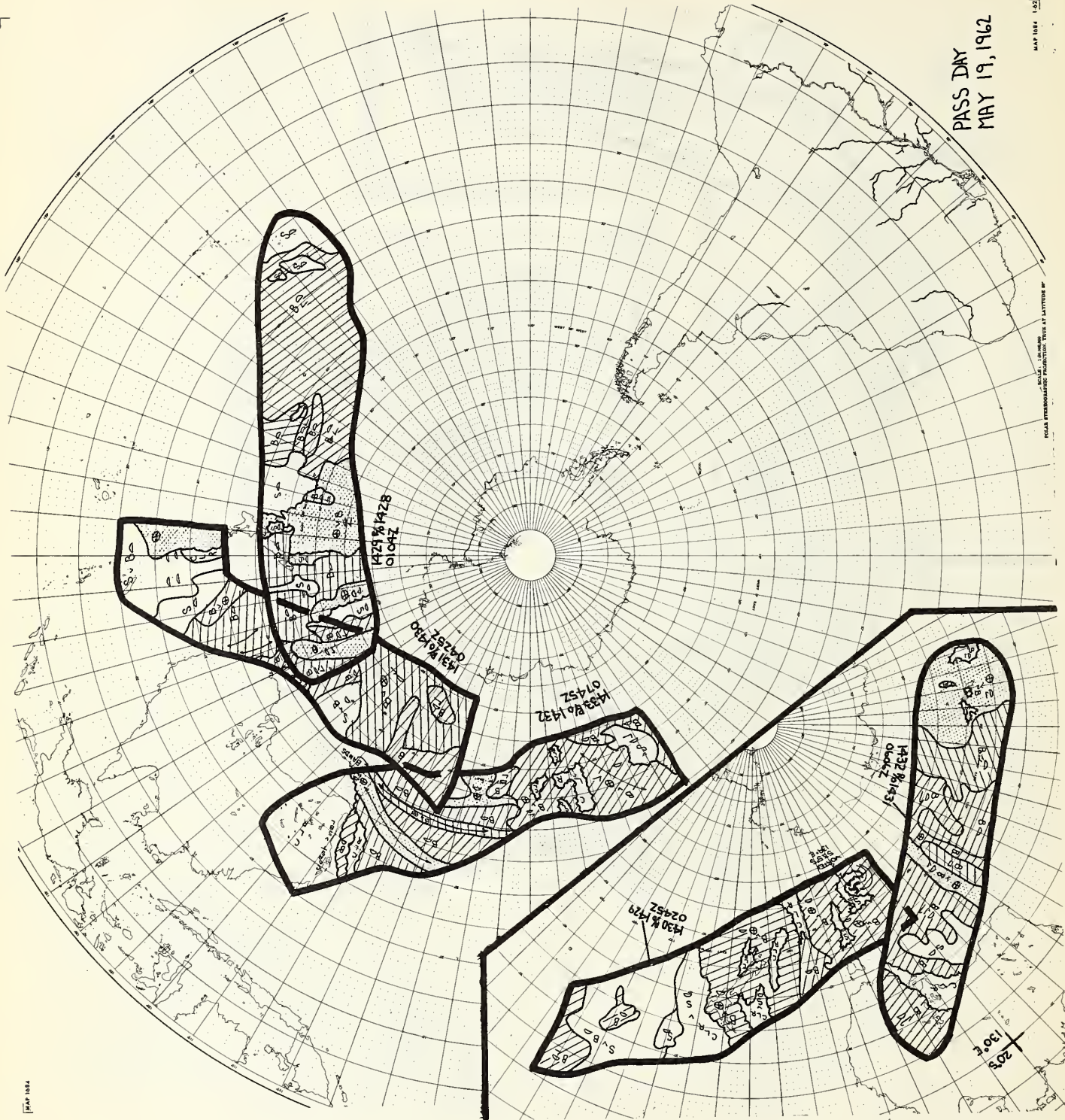


PASS DAY
MAY 17, 1962





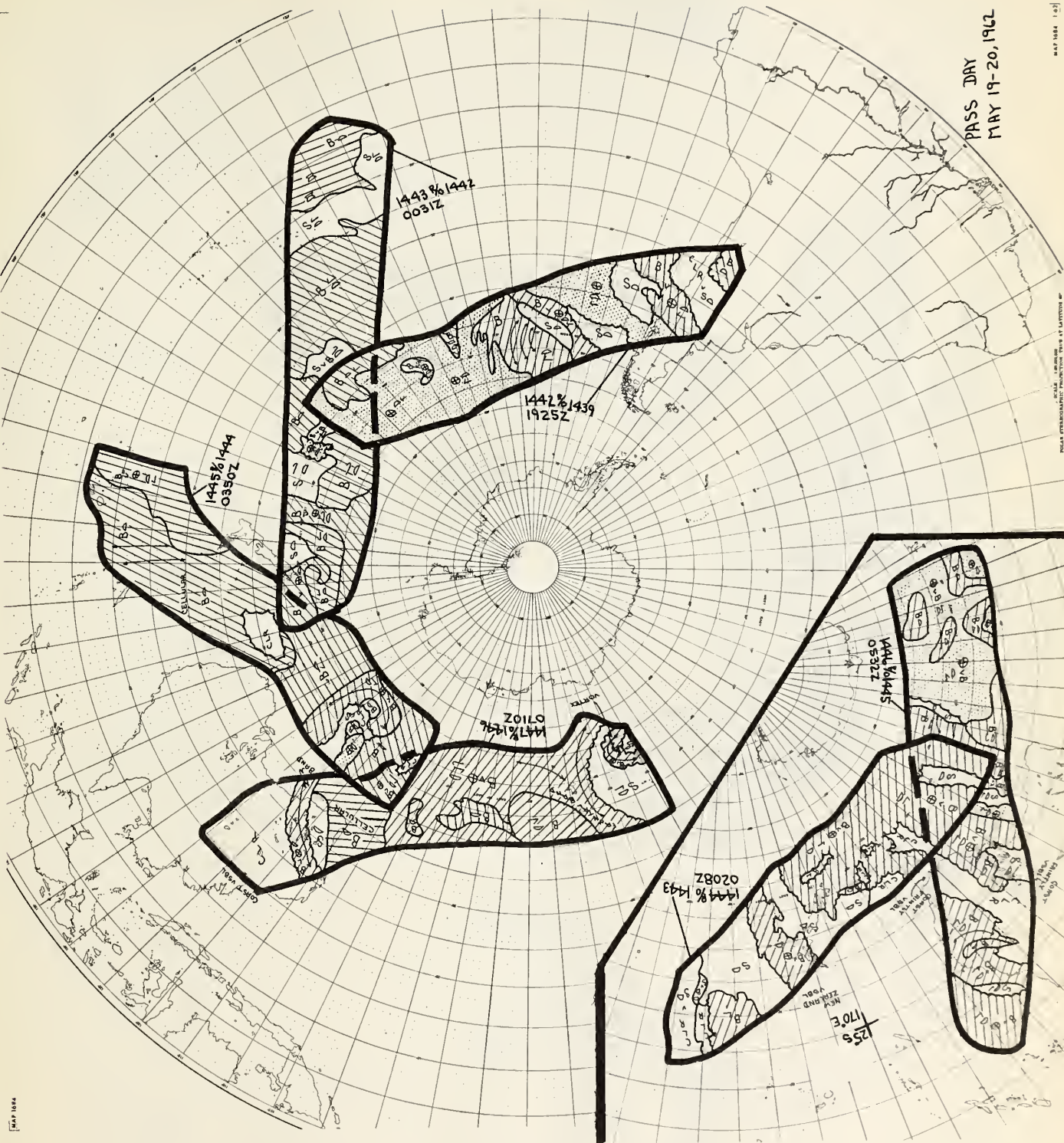
PASS DAY
MAY 18, 1962

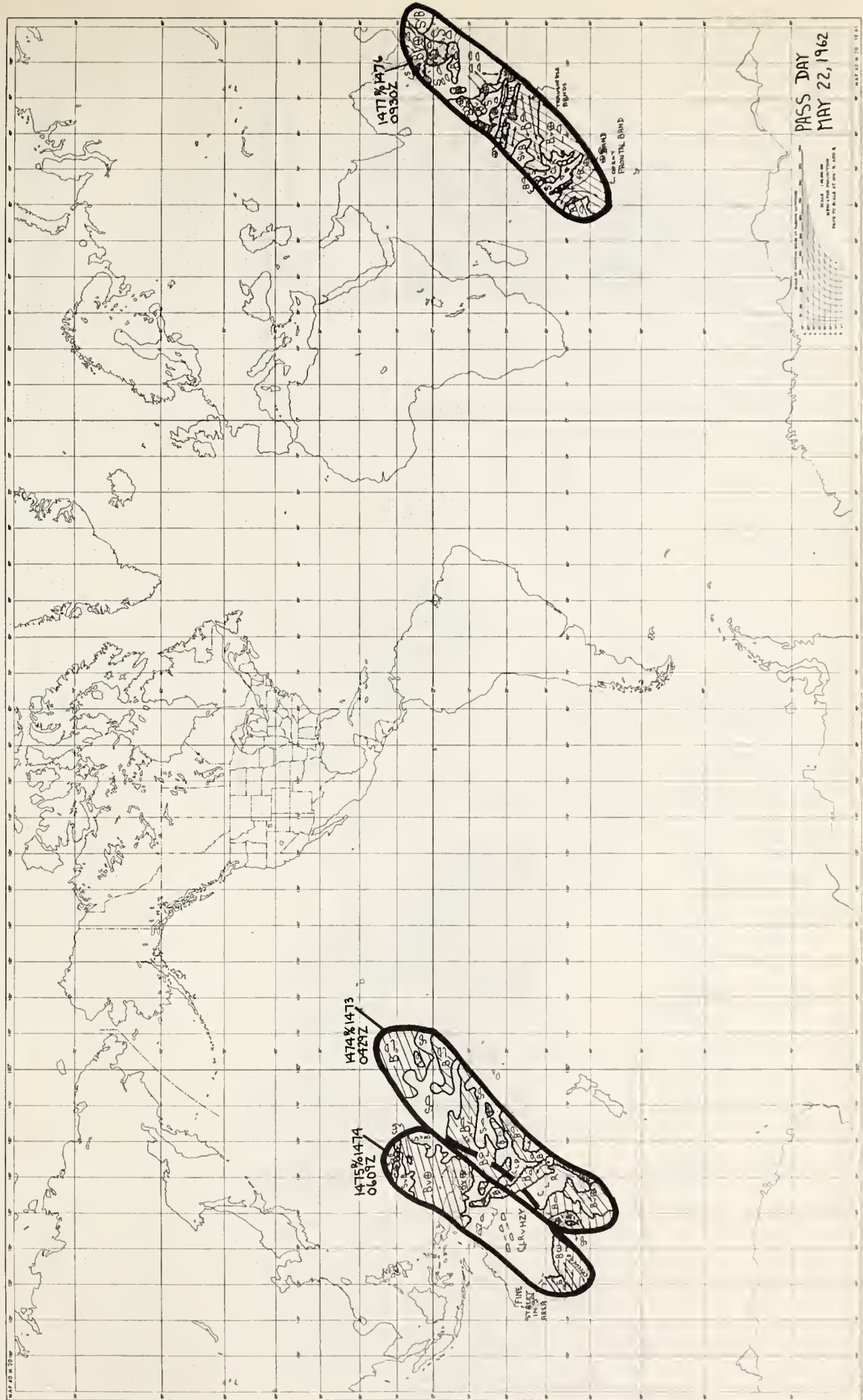


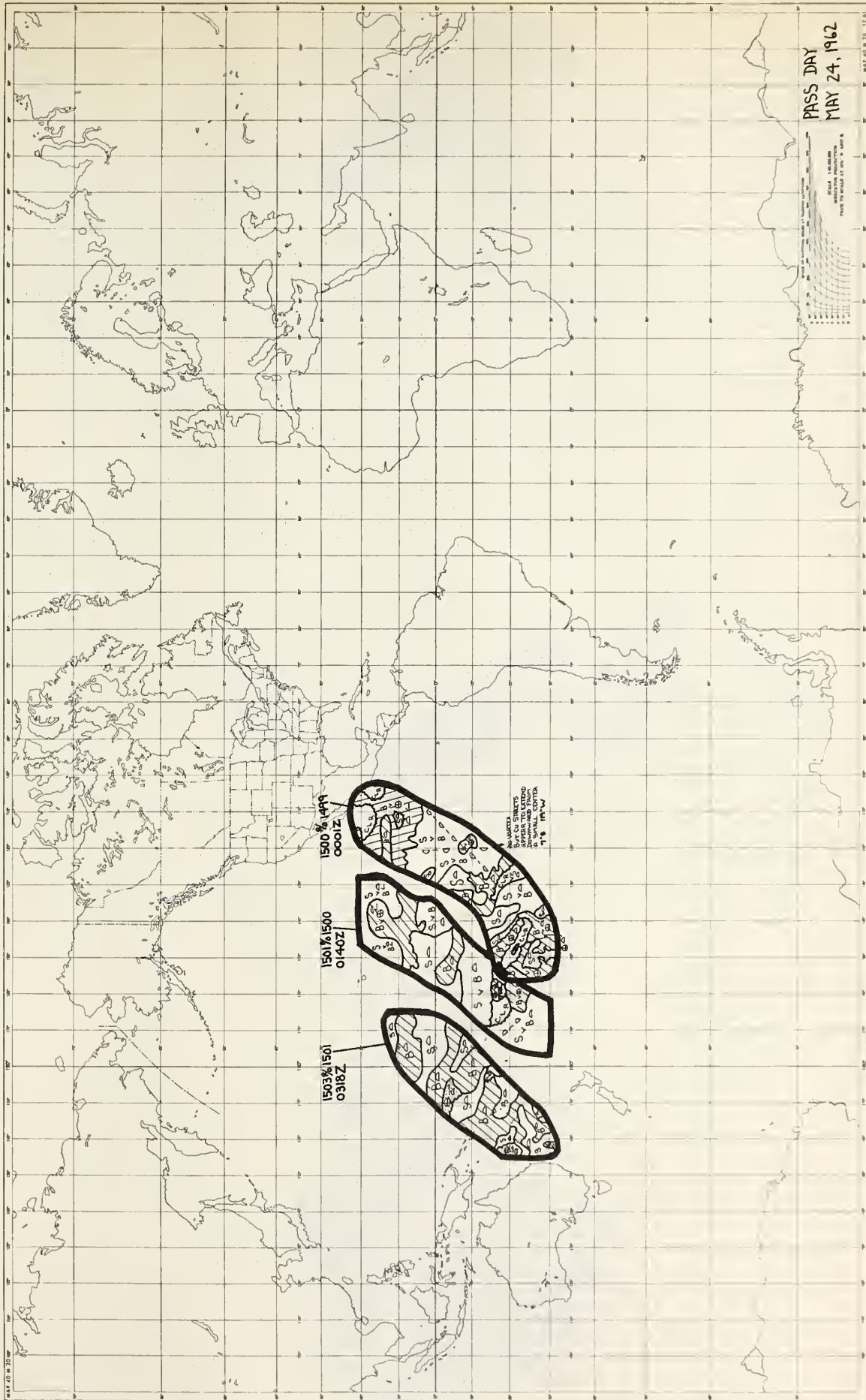
PASS DRY
MAY 19, 1962

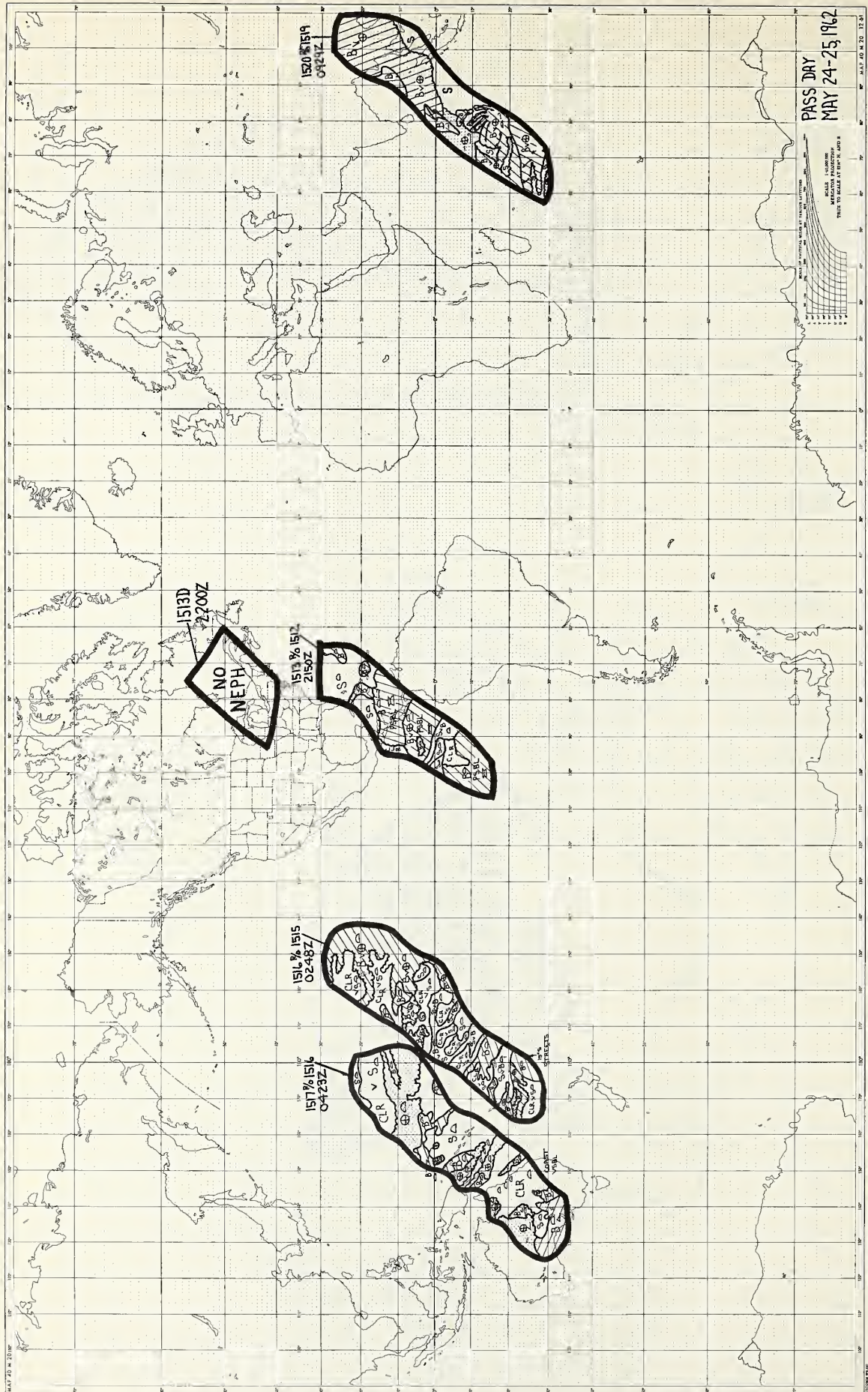
MAP 1084 1.52

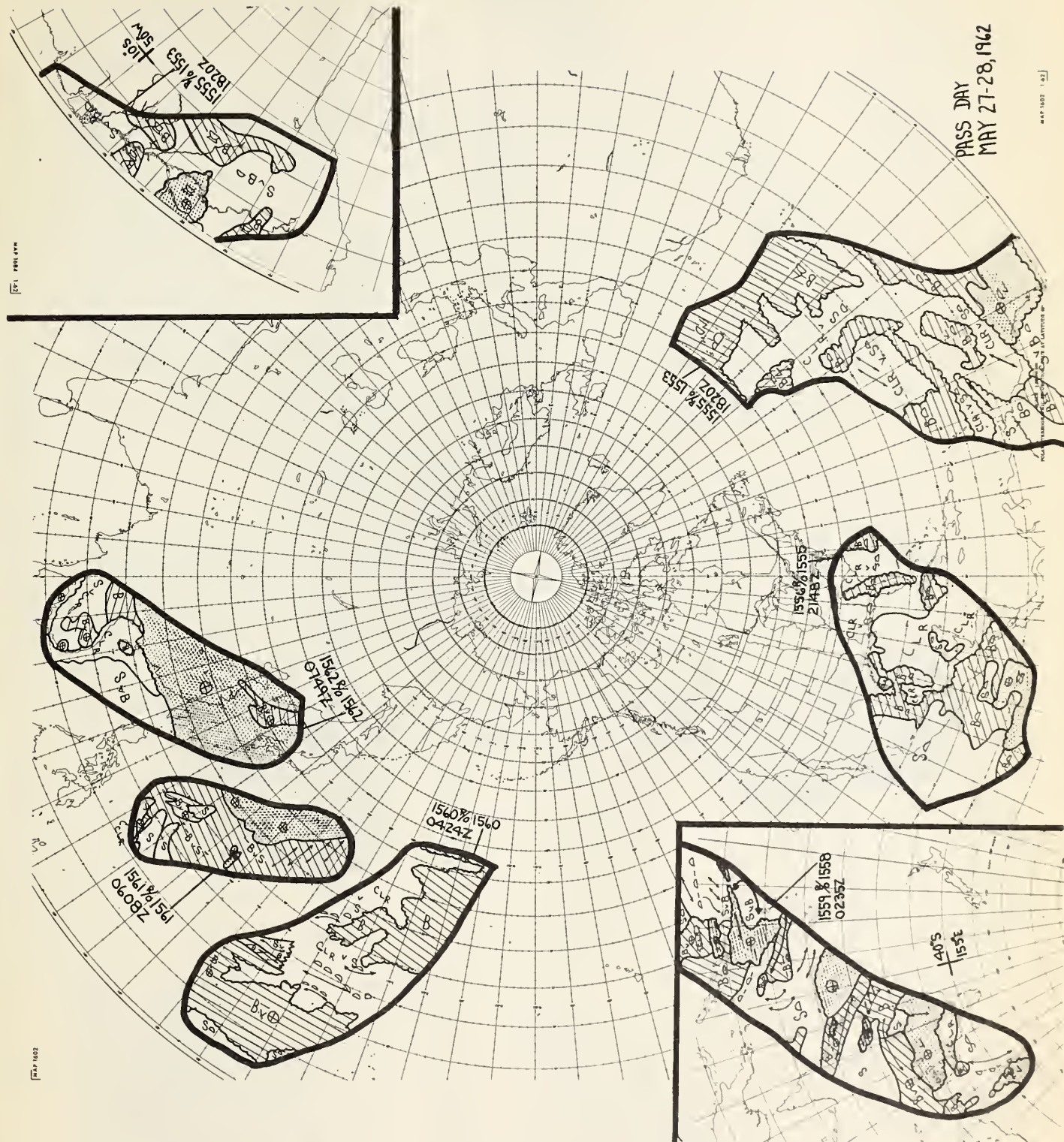
SCALE: 1:100,000
POLAR PROJECTION: TRUE AT LATITUDE 80°





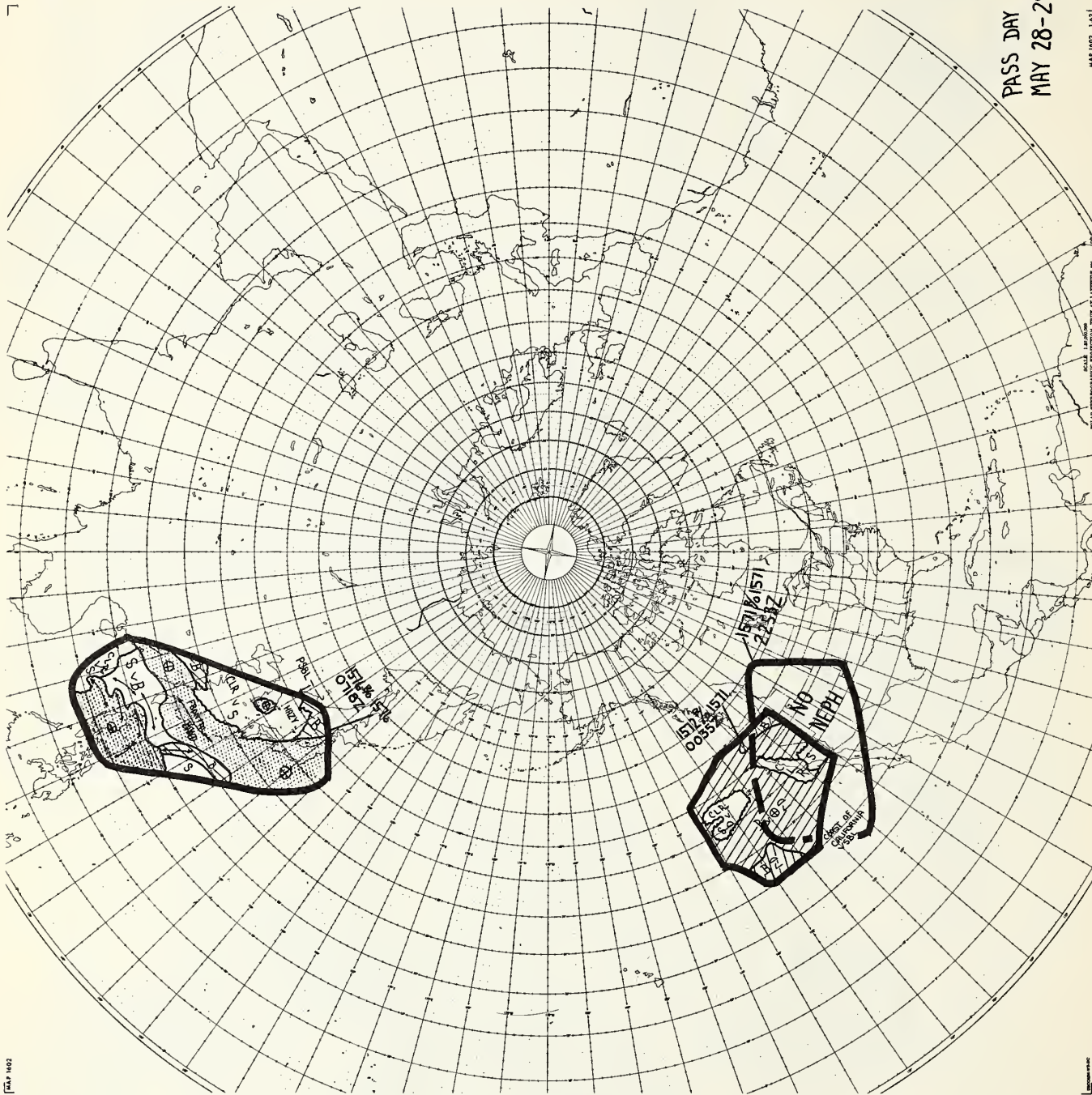




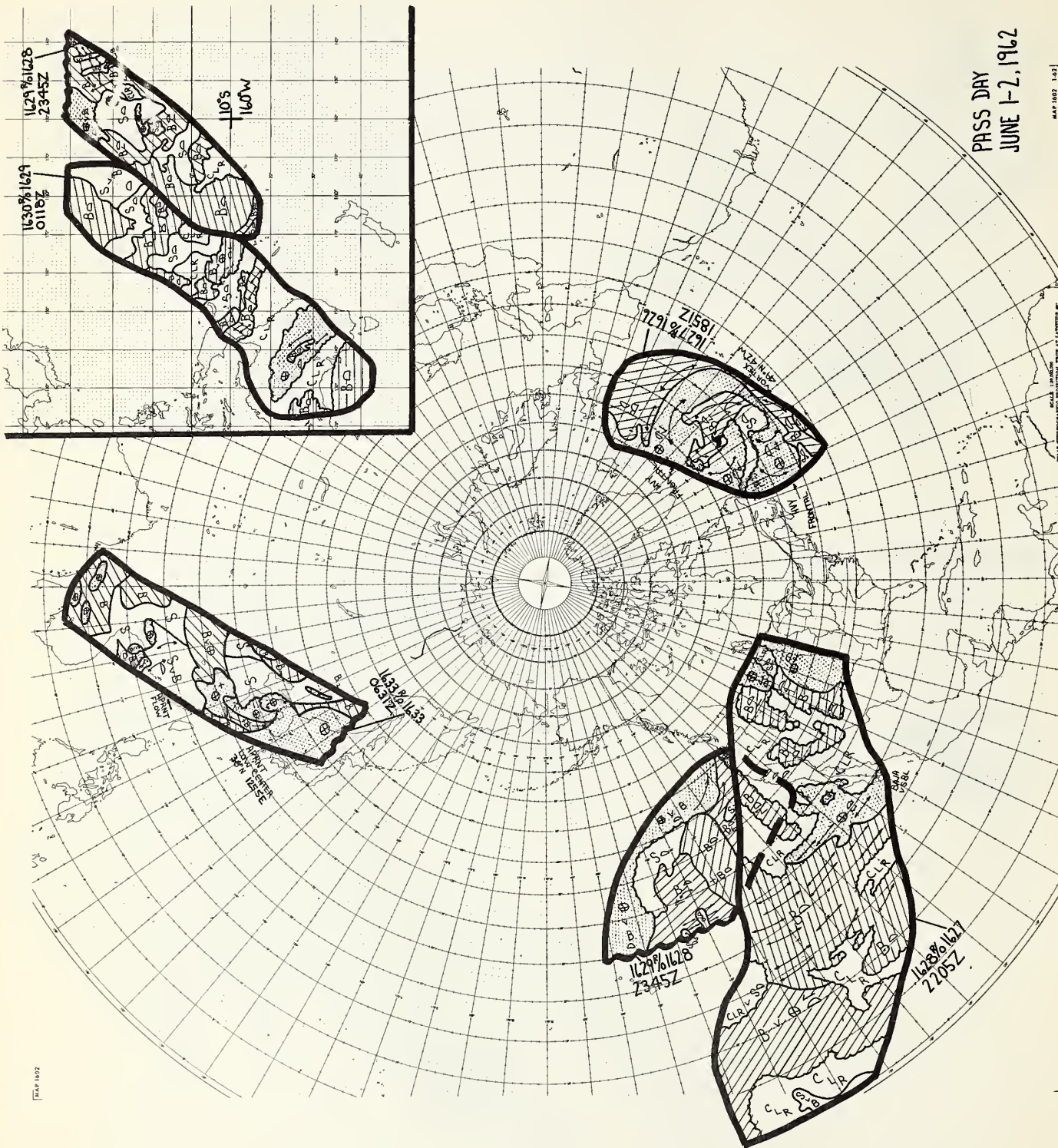


PASS DAY
MAY 27-28, 1962

MAP 1002

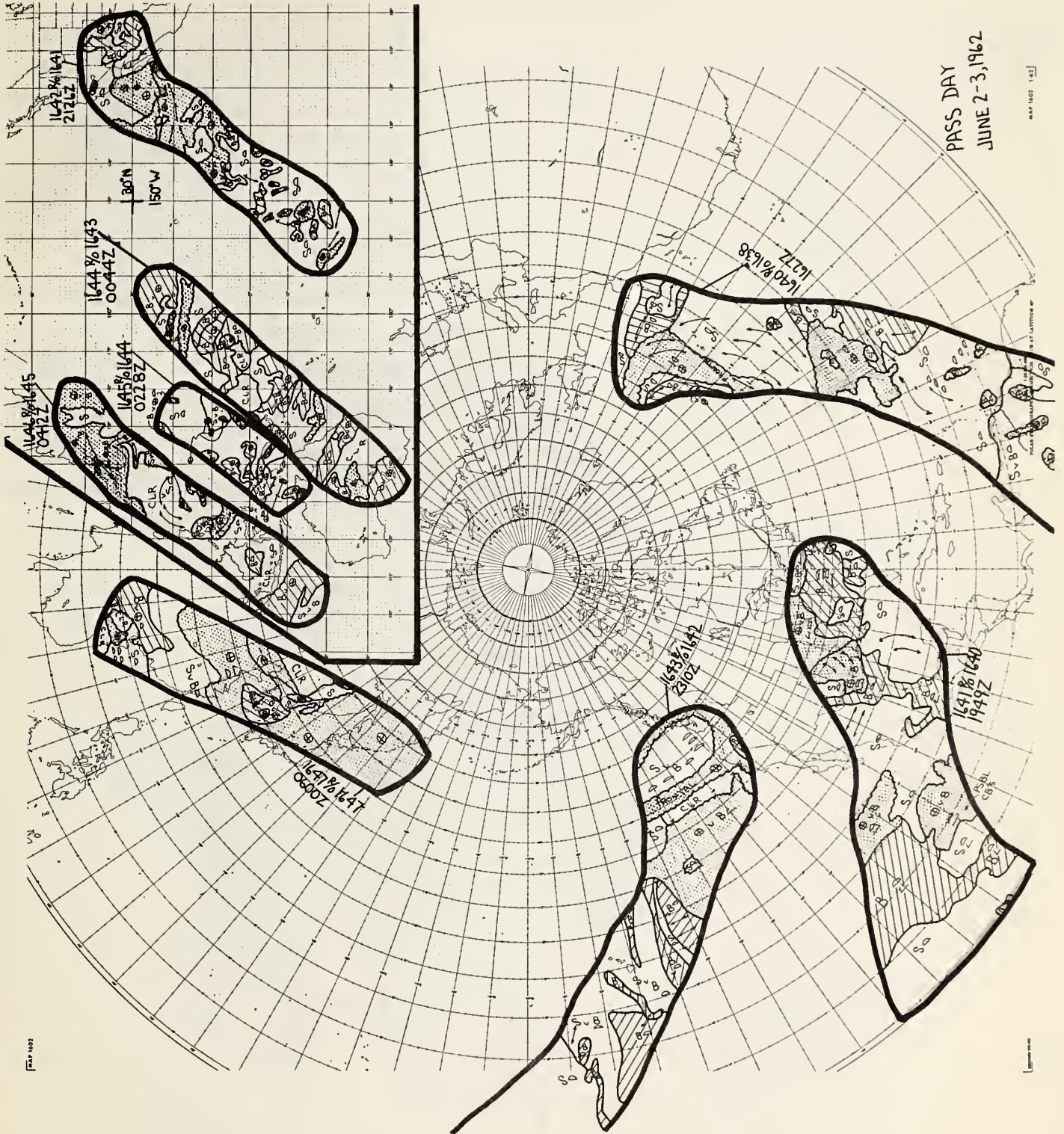


PASS DAY
MAY 28-29, 1962



PASS DAY
JUNE 1-2, 1962

MAP 1602 1-62



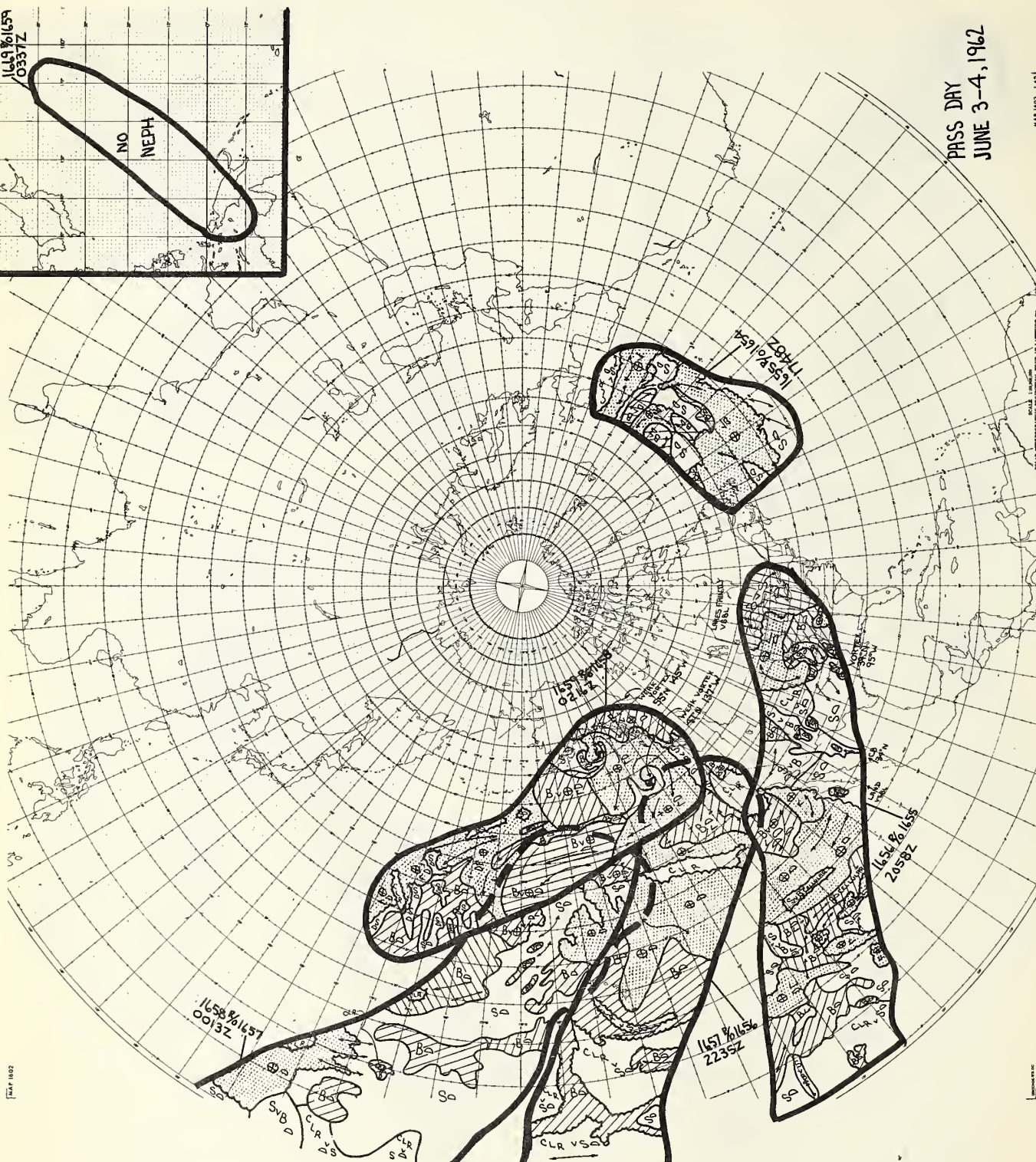
PASS DAY
JUNE 2-3, 1962

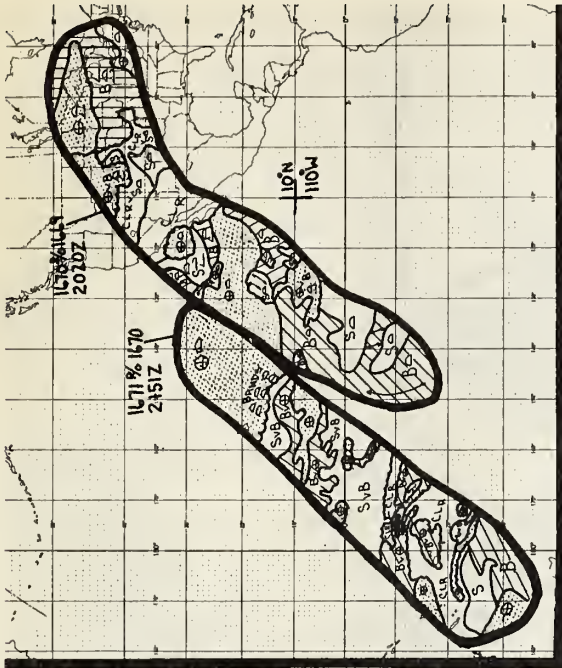
MAY 1962 1-12

NO	NEDPH
----	-------

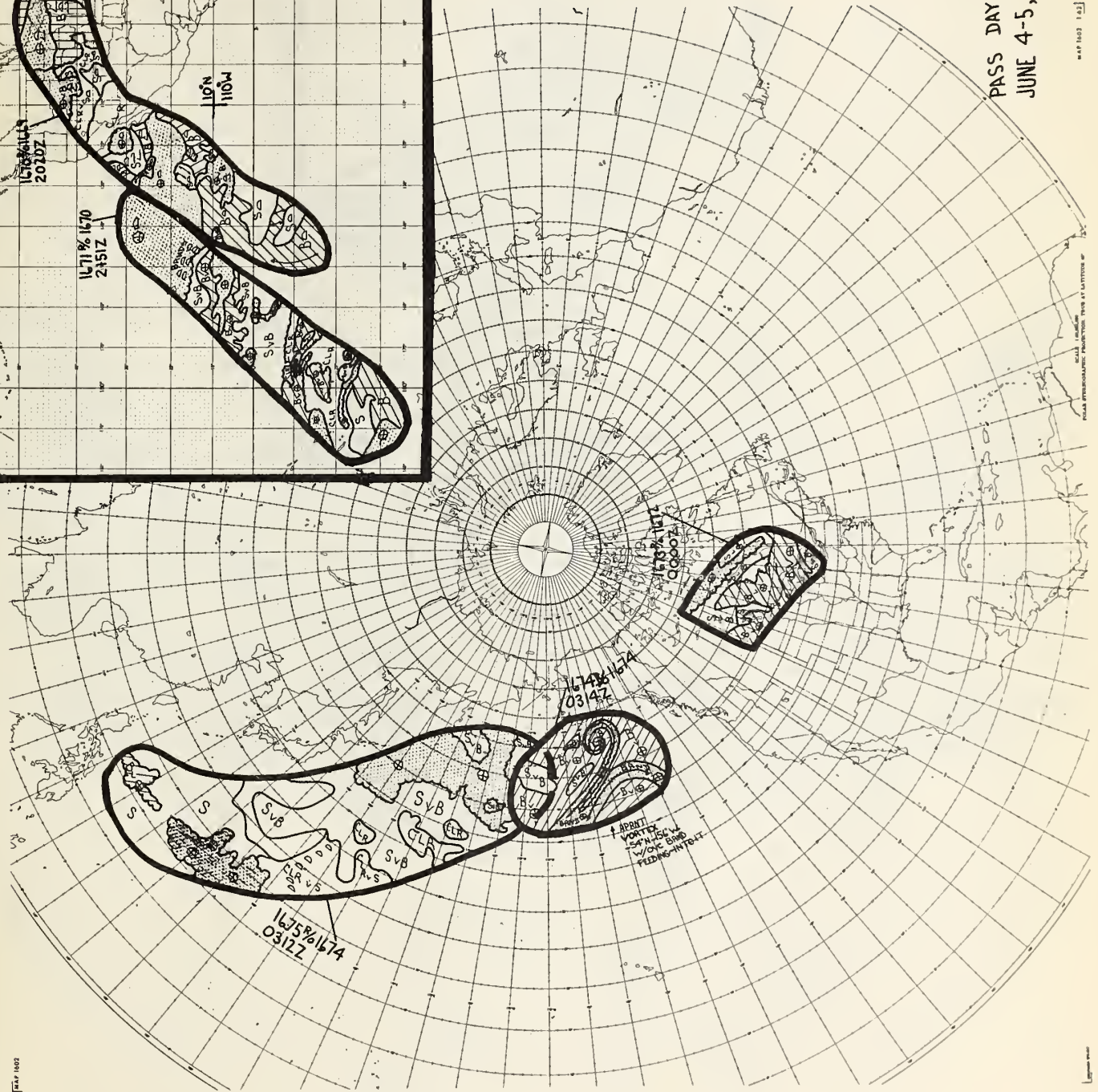
PASS DAY
JUNE 3-4, 1962

MAP 1602 1.62f





MAP 1802



MAP 1802

PASS DAY
JUNE 4-5, 1962

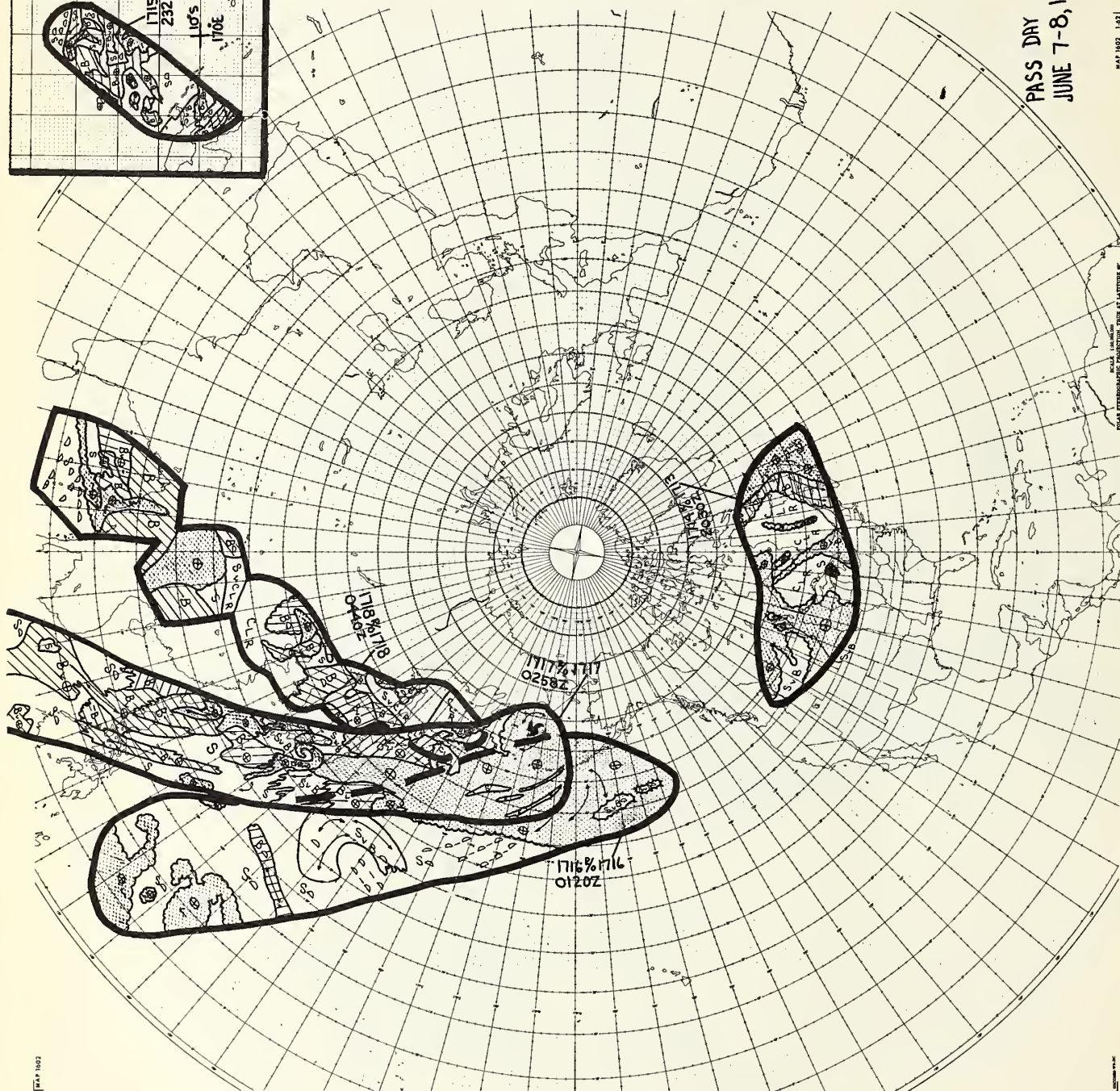
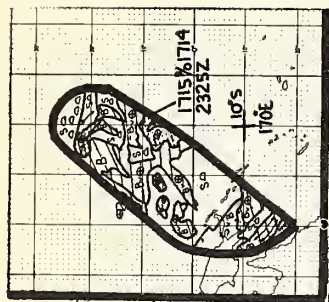
MAP 1802 1802



PASS DAY
JUNE 5-6, 1962

...





PASS DRY
JUNE 7-8, 1962

MAP 1602 1-62

SCALE: 1:100,000
PROJ: MERCATOR
COORD: UTM
DATE: 1-62



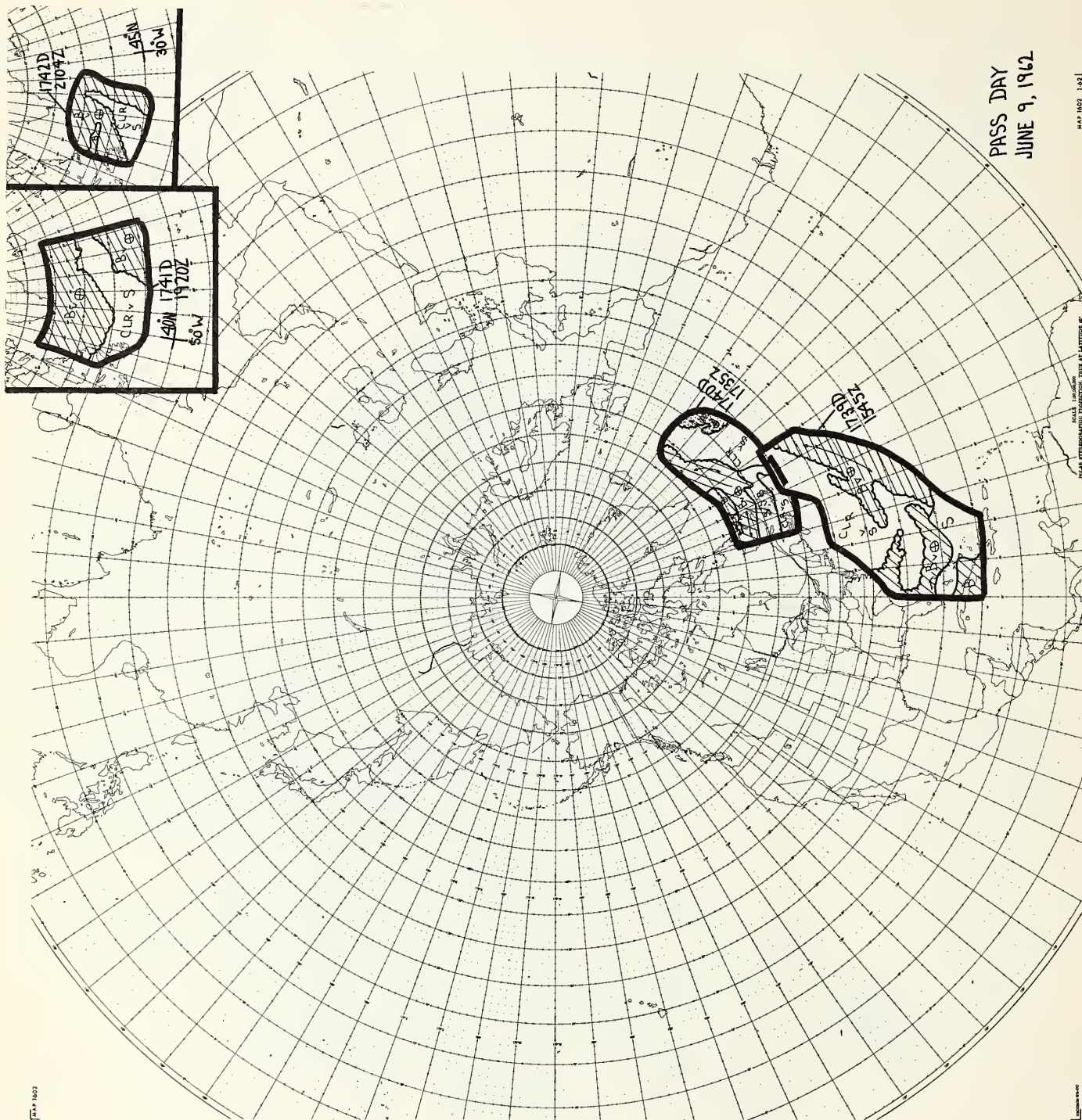
PASS DAY
JUNE 8, 1962

MAP 1003 (42)

SCALE 1:100,000
POLAR PROJECTION; PARALLEL TANGENT AT LATITUDE 40°

Legend

MAP 1002



PASS DAY
JUNE 9, 1962

MAY 1962 1 52

PENN STATE UNIVERSITY LIBRARIES



A000072079225